Journal OF THE AMERICAN DIETETIC ASSOCIATION

VOL. 18, NO. 11 NOVEMBER, 1942

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Trace Elements in Nutrition
Arthur H. Smith, Ph.D.

Vitamin A versus Carotene Content of Low-Fat Diets in Obesity, Cholecystitis, and Liver Disease
Doris Johnson, M.S.

Promoting Better Nutrition for Industrial Workers
Julia Kiene

The Dietary Treatment of Functional Hyperinsulinism
Adelia M. Beeuwkes, M.S.

The Nutrition Situation in Hawaii

Food Habits: Their Origin and Control
Roy M. Dorcus, Ph.D.

Some Psychological Aspects of Nutrition
Lowell S. Selling, M.D., Ph.D., Dr. P.H.

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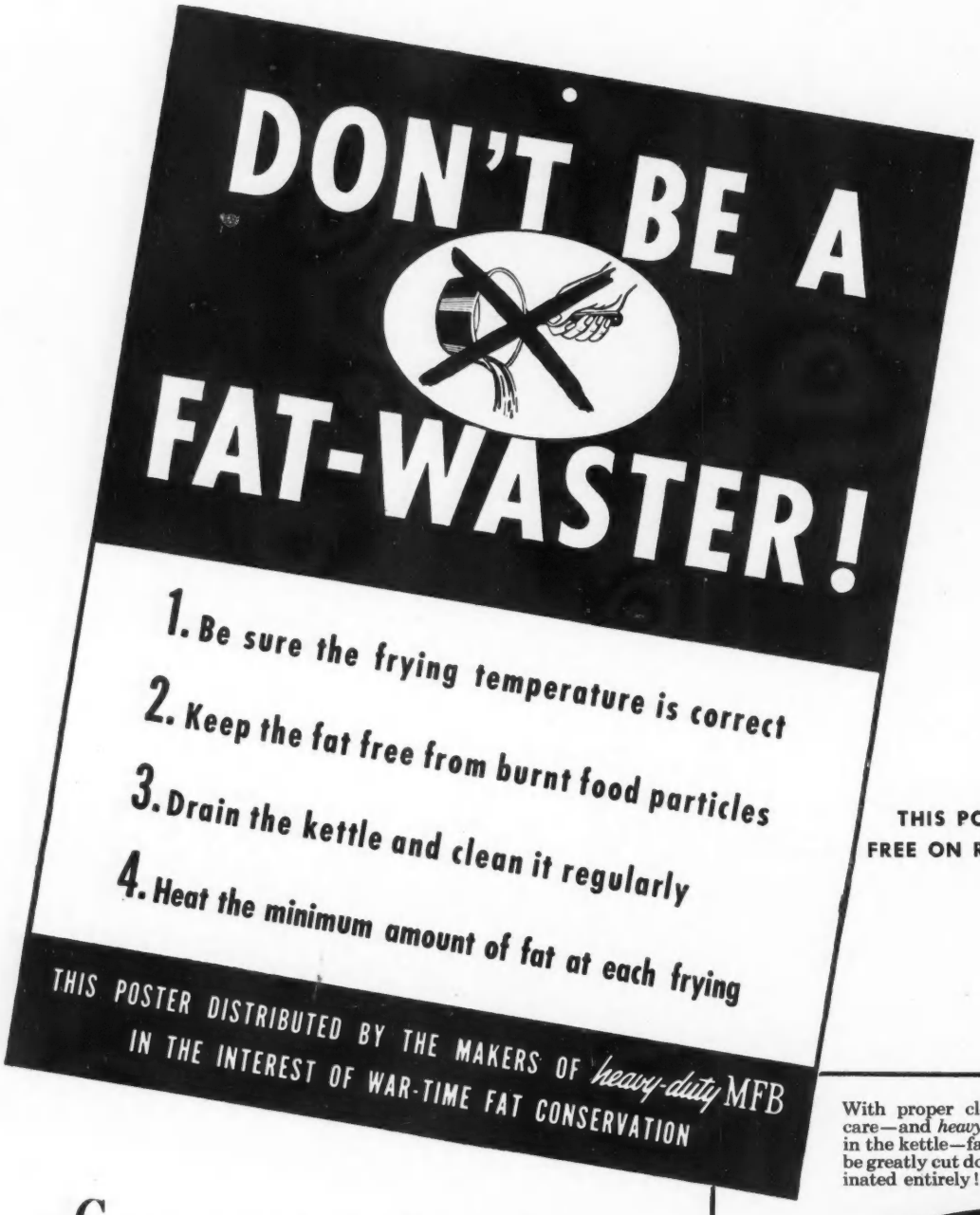
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Trace Elements in Nutrition[1]

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JUST 10 years ago a group of some twenty investigators in the field of nutrition were invited to contribute to a volume of scientific papers (1) in honor of the 60th birthday of their teacher and associate, Professor Lafayette B. Mendel. One of these papers was written by Mary Swartz Rose and bore the title "The Nutritional Significance of Some Mineral Elements Occurring as Traces in the Animal Body." Although 20 years before, Osborne and Mendel had referred to inorganic elements occurring in animal tissues in traces, I am inclined to think that the term "trace elements" as we now use it was really established in our professional vocabulary by the forceful presentations and lucid writings of Dr. Rose. The term refers to those elements which occur in our foods in extremely small concentrations, the daily requirement for which is measured in milligrams or even in micrograms. Today I want to trace briefly the subsequent development of knowledge with respect to some of the inorganic trace elements.

Several factors have combined to promote progress in this particular field of nutrition. Analytical methods have been improved through the adaptation of microtechniques, thus permitting the use of the smaller laboratory animals with the consequent saving of materials and time and also the improvement in statistical reliability of the data. Again, the use of the various photo-electric devices for color comparison has greatly expanded the scope of chemical analysis of tissues, foods and body fluids. Perhaps the most striking of the innovations which have influenced the trend of biochemical studies is the use of isotopes and of radioactive elements. Many of the features of intermediary metabolism have already been re-examined through the use of this scientific tool; the resulting newer viewpoints have been particularly striking in connection with the functions of the trace elements in nutrition and metabolism.

Since the discovery of iron in the red blood cells late in the 17th century, this element has been looked upon as indispensable. During vigorous growth there is rapid expansion of the vascular bed with prompt demand for blood pigment formation; particular attention is therefore directed to the requirement for iron at this time. Several studies carried out on preschool children indicate that adequate retention is secured with 0.6 mg. per kilo body weight per day. In the adult much less iron is required for the maintenance of balance; in one study (2) one female and three male subjects remained in iron balance for long periods on less than 10 mg. per day. In this experiment one male subject remained in iron balance for 316 days on a daily intake of 4.9 mg. Whether such a low allowance represents a safe dietary standard for the adult population of both sexes has been questioned. However, recent studies by Leverton and her co-workers (3) indicate that 6.5 mg. iron daily is adequate for normal young women, and that the currently recommended allowance (12 to 15 mg.), therefore, is ample.

Not all of the iron found in foods appears to be available for hemoglobin formation. Using the dipyridyl method as an index of available iron, Sherman, Elvehjem and Hart (4) showed that 60 per cent of the total iron in heart muscle, liver and soy beans is effective in blood pigment formation, whereas in beef skeletal muscle 50 per cent was available, and only 25 per cent of the total iron in oysters, spinach, alfalfa and blood contributed to hemoglobin formation. However, Oldham (5) has recently demonstrated that meat could be rendered as effective as ferric chloride as a source of iron for blood pigment if the meat is first heated.

The utilization of iron is dependent upon factors, several of which are known. It appears that the presence of the functioning stomach is necessary for the normal metabolism of iron (6). This may indicate a close relationship between the utilization of iron and normal gastric acidity for it has been shown (7) that the treatment of gastric ulcer with bicarbonate interferes with the utilization of usual doses of iron in the treatment of the accompanying anemia. The presence of copper is also necessary for the utilization of stored iron in the liver in the formation of blood pigment; the mechanism of this

[1] Presented before the American Dietetic Association, Detroit, October 20, 1942.

action is not known, but it appears that copper is specific in this connection.

Of considerable interest to the nutrition worker is the regulation of absorption of iron and the degree to which iron from disintegrating red blood cells is utilized. Light has been thrown upon these questions through the use of radioactive iron. Hahn and co-workers (8) have shown that the stores of iron in anemic dogs are apparently "empty," so to speak, for some 9 per cent of radioactive iron was absorbed by these dogs against less than 1 per cent in normal animals. The transfer from intestine to red cells is extremely rapid, the radioactive iron appearing in the erythrocytes within a few hours of feeding. In another study (9) in which radioactive iron was injected intravenously, the labeled iron appeared shortly in the urine, feces and bile and small losses of this radioactive iron persisted for a long time. The conclusion reached from these studies is that the iron content of the body is controlled by absorption rather than by excretion, a view supported by McCance and Widdowson (10) and by Porter (11) who believes that previous nutrition with respect to iron conditions subsequent retention. Radioactive iron injected intravenously is concentrated in the red blood cells and remains in this part of the blood much longer than the life of the erythrocyte. The conclusion has been reached that the iron from worn-out red blood cells is used over and over again in the manufacture of hemoglobin (12).

Since the epoch-making report of Hart and his collaborators (13) on the marked influence of copper on the utilization of iron in the formation of hemoglobin, serious attention has been given to copper in nutrition. It has been shown that, in common with experimental animals, the human subject responds better to iron in combination with copper (14). Most natural foods contain copper, and studies on rats with milk anemia indicate that all the compounds of copper tested were available as a source of this metal except the porphyrin-Cu compound (15). Evidence has been secured leading to the conclusion that, as with iron, the presence of the functioning stomach is required to promote storage of copper in the liver (16). Copper, after its administration to a previously depleted animal, accumulates in the plasma and the rate of hemoglobin regeneration appears to be correlated with the concentration of copper. Although so intimately associated with the formation of blood pigment, careful study has failed to show that this element is part of the hemoglobin molecule.

The requirement for copper by preschool children was investigated by Daniels and Wright (17). They observed retentions which, in general, paralleled the intakes, and concluded that for children of this age no less than 0.1 mg. per kilo body weight should be provided in the daily diet. For the adult, the daily requirement has been estimated as 2.0 mg.

Since 1927 several investigations of the part played by zinc in nutrition have been carried out; the evidence indicates that zinc is indispensable for physiologic well-being in the rat. All observers agree that when zinc is greatly reduced in the ration, growth of the experimental animal is retarded. The organs of zinc-deficient rats do not contain less of the metal than do those of normal controls, but the claim has been made that the pancreatic proteolytic enzymes and hence, absorption of proteins, is defective in the rat in the absence of zinc (18). Day and McCollum (19) limited the intake of zinc by weanling rats to 2 to 4 micrograms and observed retarded growth, alopecia and marked reduction of zinc in the bone ash. Keratinization of the lining of the esophagus and of the skin was present in these zinc-deficient animals and there was evidence suggesting interference with the utilization of riboflavin in the experimental group of animals (20).

Zinc as well as copper produces a demonstrable increase in action of the gonodotropic hormones of the pituitary (21). Zinc greatly reduces the hyperglycemic effect of adrenalin, and it is a well-known fact, utilized in therapy, that the action of insulin is delayed by the presence of this element.

The enzyme, carbonic anhydrase, contains 0.3 per cent zinc or more and it appears that the metal is an important part of the enzyme, for the ratio of this element to the activity of the enzyme is constant, irrespective of the purity of the preparations. All of the zinc in the red blood cells appears to be combined in carbonic anhydrase (22). Using a spectrographic method of analysis, Scoular (23) studied the metabolism of zinc in 3 preschool boys; by far the largest part of administered zinc was excreted in the feces. On the basis of retentions of zinc, the conclusion was reached that the daily requirement is about 0.3 mg. per kilo body weight.

Nothing was mentioned regarding cobalt in Rose's review of 10 years ago, but research carried out in the interim has demonstrated that this element exerts a pronounced effect upon blood pigment formation. The studies of Orten and co-workers (24) show that the administration of small amounts of cobalt greatly augments the concentration of circulating blood cells with the result that the blood volume is likewise increased. The spleen seems to play little, if any, part in this phenomenon and the polycythemia can be produced in animals with an existing anemia caused by low-protein feeding The response of hematopoiesis to cobalt administration has been demonstrated in the dog.

Some five years ago accounts of a disease in grazing farm animals began to appear in the literature. These were reported in all parts of the world and

involved sheep and cattle particularly. The symptoms were strikingly similar: rough, dry hair in cattle, progressive debility, lack of appetite, emaciation, reduction in milk flow, abortion, severe microcytic anemia and depraved appetite (pica). It was found that administration of cobalt salts promptly produced improvement in diseased animals, and also prevented the appearance of the disease. In a recent report (25) of the occurrence of this disease in northern Michigan, 13 mg. cobalt as the chloride or sulfate brought about spectacular improvement, and it has been stated that 1 part per million of cobalt in the feed will act as a preventive. In Michigan, the hay from regions of endemic cobalt deficiency contained only one-third as much cobalt as did the hay from immune regions. In another study (26), it was shown that the livers of normal cattle had 0.12 p.p.m. cobalt, whereas the livers from diseased animals had only 0.02 p.p.m.

Various suggestions have been offered to explain the action of cobalt. According to one view (27), cobalt prevents the deposition of iron in the liver, spleen and bone marrow, but promotes the immediate utilization for hemoglobin building. Another view (28), based on the prevention of cobalt toxicity by cystine, methionine and cysteine, emphasizes the interference with oxidation produced by cobalt, and suggests that the polycythemia is an evidence of this interference. Another group of investigators (29) believes that this element suppresses the respiratory function of immature red blood cells and favors their subsequent early release into the blood stream. Whatever the mechanism of its action, cobalt must be entered on the list of important trace elements in nutrition.

The question of the indispensability of manganese in nutrition was raised in this country and in England around 1930. Experimental rations, low in this element, do not support the usual growth rate, but when as little as 4 micrograms manganese are added to a milk-iron-copper diet, growth is improved in rats and pigs. In rats and mice restricted to diets deficient in manganese, the estrus cycle is abnormal and testicular degeneration occurs in the male. The lack of manganese also results in poor lactation. It is obvious, therefore, that reproduction is not normal in the absence of manganese in otherwise adequate diets.

In 1935 Daniels and Everson (30) reported that the young from female rats on manganese-poor rations did not thrive when suckling either their own mother or another maintained on an adequate diet. Normal young, on the other hand, showed growth when suckling the manganese-deficient mother; apparently the observed congenital debility was the result of defective intra-uterine nutrition. Two years later the discovery was announced that manganese was effective in preventing chondrodystrophy (perosis) in chicks (31). As little as 30 p.p.m. of this element exerted this beneficial effect. When the hen is fed a ration poor in manganese, the eggs are likewise deficient in this respect and the hatched chicks have shortened leg bones, wing bones and spinal column, and normal locomotion is impossible. Addition of manganese to the hen's diet or injection of manganese salts into the egg prevents the abnormal development of the embryonic cartilage. Although recently choline and a second organic factor (probably biotin) have been recognized as factors in the prevention of perosis, manganese is still recognized as a dietary essential in this respect.

The story of iodine has long been associated with the thyroid gland, for enlargement of this organ, known as simple goiter, has been shown both experimentally and clinically to respond to the administration of iodine and its salts. In this connection, Michigan may be proud of its record in the reduction of simple goiter from an incidence represented by 35 per cent in Detroit schools in 1924 to less than 2 per cent in 1932, an improvement accompanied by a concomitant decrease in the number of operations for goiter (32). This achievement in public health was accomplished largely by encouraging the use of iodized salt; failure of consumption of this type of salt in certain localities was paralleled by subsequent increase in simple goiter. Studies of the stability of this valuable dietary adjunct have shown that no appreciable loss of iodine occurs during storage of iodized salt at room temperature for 6 months; after 16 months' storage, however, from 34 to 54 per cent of the iodine had been lost (33). Of considerable interest is the discovery that cod liver oil contains iodine and the statement has been made that the recommended daily dose of cod liver oil of good quality may provide as much as three-fourths the daily needs of man for this element (34). That all compounds of iodine are not of equal value in nutrition is indicated by the observations that eggs from hens given iodides, iodates, kelp, iodized linseed meal and diiodotyrosine in their feed, contained more iodine than eggs from hens fed iodosalicylic acid and fish meal. Again, the iodine in dried oysters, dried haddock and dried milk prevented experimental goiter in rats, whereas that in Irish moss was ineffective in this respect.

In common with the situation involving vitamins, it has been repeatedly observed that the excretion of iodine by individuals in goitrous regions is less than that where the intake is ordinarily higher. Metabolism studies (35) have shown that patients with exophthalmic goiter require an intake of iodine two to three times greater than do normal persons, and that they excrete more in the feces.

Through the use of radioactive iodine it has been shown that the thyroid gland takes up this element to a greater extent than does the liver, spleen or

pituitary, and that the normal thyroid collects 80 times as much, and the hyperplastic thyroid 100 times as much iodine, predicted on the basis of uniform diffusion (36). In a comparative study of normal and hyperthyroid persons it was shown that the latter absorbed radioactive iodine much more rapidly than the former, but did not retain it as long (37). That stimulation of thyroid activity results in increased iodine utilization by the gland is indicated by the recent observation that more radioactive iodine is retained by thyroids previously stimulated by thyrotropic hormone than by normal glands (38).

Of considerable interest from the therapeutic point of view are the discoveries regarding the efficacy of iodized proteins in the treatment of thyroid dysfunction. Iodized serum proteins were found to be effective in the treatment of hypothyroidism; the proteose and peptones from these proteins and the amino-acids from the completely hydrolyzed proteins were likewise effective (39). From another laboratory the isolation of thyroxin from iodized casein hydrolysates has been reported (40). These recent developments in the metabolism of iodine emphasize anew the great importance of this trace element in nutrition. In this connection it is of interest that the addition of 0.02 per cent iodine to common salt represents the first instance of fortification of food on a large scale; the success of the venture appears to have been demonstrated.

In the foregoing discussion of only a few of the trace elements, the attempt has been made to emphasize the manifold developments in the past decade; these have demonstrated that nutritive success cannot be attained unless the trace elements are represented in the dietary. While some of these "inorganic" constituents of the diet are rarely lacking, enough of them are deficient in the food products of certain localities to warrant consideration of this group of essentials by the alert dietitian.

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Vitamin A Versus Carotene Content of Low-Fat Diets In Obesity, Cholecystitis, and Liver Disease[1]

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THE present study is a result of the recommendations of the committee who worked on this project in 1940–41. This committee undertook to analyze low-fat and low-caloric diets for their vitamin A and carotene content. The diet manuals in the library of the American Dietetic Association furnished the diets studied. A total of 57 diets from 16 hospitals were analyzed. In determining the vitamin A and carotene content of these type diets it was found that they were low in vitamin A, as such, and that it was impossible to make a fair estimation of the vitamin A from carotene inasmuch as the vegetables, which furnish the greater part of the carotene of the diet, were listed on the basis of their carbohydrate content rather than their carotene content, and no indication was given regarding the frequency with which liver and certain fruits and vegetables were used. Since there is no correlation between carbohydrate and carotene content of vegetables it was suggested that more nearly reliable data concerning the vitamin A and carotene content of low-fat and low-caloric diets be collected and analyzed in the form of actual daily diets which had been served in various hospitals, and that these data be obtained from various types of hospitals in widely separated localities in order to allow for variations due to such factors.

The committee of 1940–41, under the chairmanship of Dr. Helen T. Parsons, ably reviewed in its report the value of such a study and the many factors entering into vitamin A and carotene assimilation and metabolism. It was pointed out that even though the carotene content of a diet may be adequate, it has been shown that the human organism in diabetes, in cases of liver damage, and in some other conditions, does not have the normal ability to convert carotene into vitamin A. It was also noted that the presence of certain fats or mineral oil interfered with the ability of the human body to absorb vitamin A and carotene from the digestive tract. It was further pointed out from the work of Booher and Callison that human subjects differed considerably in their ability to utilize carotene from different sources; for example, in some cases less vitamin A was required to maintain normal dark adaptation when carotene was obtained from peas than when it was obtained from spinach.

METHOD

The present study undertook to analyze low-fat and low-caloric diets, as fed, for their vitamin A and carotene content. Letters were addressed to four hospitals in each of the nine geographic divisions of the American Dietetic Association and to chairmen of state diet therapy committees, explaining the project and asking for cooperation. An attempt was made to reach large and small hospitals, both public and private.

The diets analyzed in this study include 1500-calorie, 1200-calorie, 800-calorie, and low-fat diets. Menus for six consecutive days were submitted. The vitamin A and carotene values of each diet were obtained by the calculation of a 6-day average. The use of vitamin supplements and mineral oil was also reported with each set of menus. Since the menus were collected between January and April it was impossible to study the effect of seasonal variations.

The estimation of the vitamin A values was based on data by Booher and Marsh.[2] In using these

[1] Report of a Subcommittee of the Diet Therapy Section, American Dietetic Association, 1941–42, under the direction of the Section Chairman, Mrs. Dorothea Fletcher Turner, University Clinics, University of Chicago.

[2] Booher, L. E., and Marsh, R. L.: The vitamin A values of 128 foods as determined by the rat growth method. Technical Bull. #802, U. S. Department of Agriculture, December 1941.

figures we are fully aware that the absolute values obtained might have been different had different tables been used. In view of the controversy over the vitamin A content of foods and the wide ranges of values as a result of geographic, seasonal, and feeding factors, as well as in sampling and preparation for assay, it seemed that no greater source of error was being introduced by using this one set of figures.

The vitamin A values for the foods were estimated as accurately as possible from the descriptions and amounts listed on the menus. In some instances it was impossible to estimate the vitamin A content of a food, but in no instance could such an omission have materially affected the final results since no foods of high vitamin A potency were involved.

RESULTS AND DISCUSSION

This study represents 18 hospitals from 11 states and the District of Columbia, including government-owned and private institutions. The data represent 567 days and 1701 meals. Of the total of 100 diets analyzed, 15 were 1500-calorie, 26 were 1200-calorie, 21 were 800-calorie, and 38 were low-fat diets.

In collecting the data, the vitamin A values were listed separately from the carotene values and the results are recorded separately in this report.

The final averages, together with the ranges of values for the four diets, are given in table 1. The averages are recorded for vitamin A from carotene and for vitamin A in diets in which liver was served, and in those in which liver was not served. Since the vitamin A value for liver is so high this division was necessary in order to evaluate in some measure the influence of this single factor. In all cases where liver was served the average value for the diet per day is at least twice the 5000 I.U. recommended as the daily requirement for the normal individual by the National Research Council; thus the values range from 10,434 I.U. for the 800-calorie diet to 14,098 I.U. for the 1200-calorie diet. This does not include the vitamin A that could have been derived from the carotene present. In those diets in which liver was not served, average values for vitamin A are extremely low, particularly in the 800-calorie and the low-fat diets, being less than 1000 I.U. in each, and the 800-calorie diet having only 389 I.U. In such diets the carotene sources of vitamin A assume much more importance. However, since there is some question concerning the advisability of depending almost entirely on carotene for vitamin A in such diseases as diabetes, liver damage, and some other conditions, these diets might not be considered adequate in vitamin A.

A study of the ranges of vitamin A values of the diets shows them to be quite wide and the values unevenly distributed. Thus vitamin A values range from as low as 91 and 97 I.U. per day for some low-fat diets to as high as 26,582 I.U. per day for a 1200-calorie diet. Of the 59 diets in which liver was not served, 32 contained less than 1000 I.U. vitamin A per day; 20, between 1000 and 2000 I.U.; and 7, from 2000 to about 2700 I.U.

In the few instances where the vitamin A values of the diets were above 2000 I.U. and liver was not served, a large number of eggs and some cream and butter were used. In no case did such diets have a vitamin A value above 2700 I.U. In nearly all of the low-caloric diets butter was served, while it was included in only half the low-fat diets. Skim milk was used more often than whole milk on all except the 1500-calorie diets. Cream was served on 18 of the 100 diets reported. American cheese was served 47 times in the 567 days.

The vitamin A values derived from carotene were quite high in all the diets since vegetables and fruits were extensively used. Table 2 shows the number of times fruits and vegetables high in vitamin A-forming substances were served in the total number of days studied. It will be noticed that spinach was served on an average of once every 4 days, carrots once every 3 days, string beans once every 4 days, and tomatoes every other day. Other foods high in carotene, such as cantaloupe, kale or other greens, Hubbard squash, sweet potatoes, and broccoli, were served infrequently, particularly kale and other greens. Peas, apricots, asparagus, and peaches, although lower in carotene, were served frequently enough to be a considerable source of vitamin A.

TABLE 1

Summary table of vitamin A versus carotene content of low-fat and low-caloric diets with and without the use of liver

DIET	TOTAL NUMBER OF DIETS	CAROTENE—AVERAGE AMT. PER DIET	VITAMIN A					
			3 oz. or more liver once every 6 days			No liver used during 6-day period		
			Number of diets	Average vitamin A per diet	Range	Number of diets	Average vitamin A per diet	Range
		I.U.		*I.U.*	*I.U.*		*I.U.*	*I.U.*
1500-calorie	15	8975	6	13,011	6664 to 24,499	9	1654	986 to 2269
1200-calorie	26	5702	14	14,098	3854 to 26,582	12	1179	594 to 1977
800-calorie	21	9006	13	10,434	5901 to 16,299	8	389	103 to 868
Low-fat	38	7877	8	12,242	6559 to 23,437	30	969	91 to 2644

Table 3 shows the number of times vitamin supplements were given. Of the 100 diets studied only 18 were supplemented with vitamin A, indicating that this is not the general practice.

The use of mineral oil on low-fat and low-caloric diets and the effect of this practice on the assimilation of vitamin A and carotene were discussed in a 1940–41 report of this section. Table 4 summarizes the frequency with which mineral oil was used and the time when it was administered. In 28 diets mineral oil was used. In two of the diets mineral oil was used in cooking. In the other instances the time of administration varied considerably, and in a few cases the oil was given twice a day.

TABLE 2

Number of times fruits and vegetables served in 567 days

Cantaloupe	4
Asparagus	95
Beet greens	1
Mustard greens	1
Kale	1
Other greens	8
Sweet potato	7
Peas	163
Spinach	131
Carrots	172
Broccoli	40
Tomatoes	242
Apricots	121
Peaches	111
String beans	112
Hubbard squash	59

TABLE 3

Frequency with which vitamin supplements were used

DIET	NO. OF DIETS	VITAMIN A	VITAMIN B COMPLEX	ASCORBIC ACID
1500-calorie	15	1	2	0
1200-calorie	26	7	7	5
800-calorie	21	7	7	5
Low-fat	38	3	13	5

It would seem, therefore, that since low-fat diets, due to their very nature, are low in vitamin A as such, means must be taken to make them more adequate. Dietitians and physicians in administering these low-fat and low-caloric diets, should be fully aware of this dietary inadequacy and take means to remedy it. The weekly inclusion of three or more ounces of liver or the use of adequate vitamin supplements, therefore, becomes imperative.

The value of carotene sources of vitamin A in some conditions is debatable, but more investigations are necessary before the value of green or yellow vegetables as a source of vitamin A can be established with certainty. At present it would seem advisable to consider carotene as a supplementary rather than a main source of vitamin A in diabetes, liver damage, and other diseases where there is impaired ability to convert carotene to vitamin A or where assimilation of carotene is abnormal.

Furthermore, until more is known about vitamin A and carotene assimilation as this is affected by mineral oil, the use of the oil as a food adjunct should be discontinued.

TABLE 4

Frequency with which mineral oil was used

DIET	NO. OF DIETS	MINERAL OIL	TIME WHEN ADMINISTERED
1500-calorie	15	5	Bedtime 1 10 a.m. 2 6 p.m. 2
1200-calorie	26	11	In cooking 2 Bedtime 4 P.R.N.* 1 8 a.m. 2 9 p.m. 1 4 p.m. 2
800-calorie	21	6	P.R.N. 1 Bedtime 6
Low-fat	38	6	8 p.m. 2 P.R.N. 1 10 a.m. 2 6 p.m. 2 Bedtime 1

* *Pro re nata, i.e.*, according to need.

CONCLUSION

Low-fat and low-caloric diets as served in various hospitals, when analyzed for vitamin A and carotene content, were found to be low in vitamin A when liver was not served and to be high in carotene due to the large amount of fruits and vegetables included.

Since the metabolism and assimilation of vitamin A and carotene may be unfavorably affected by several factors it is imperative that all low-fat and low-caloric diets include liver once a week or that adequate vitamin A supplements to the diet be included. This conclusion is based on the assumption that the vitamin A value for liver as given by Booker and Marsh is correct.

Mineral oil should be considered a medicine to be used at the discretion of the physician, rather than a food, and an active stand should be taken against its use as a food adjunct. Diets other than low-fat and low-caloric, especially diabetic, and regular and soft diets as served in the hospital, should be evaluated for their vitamin A values.

ACKNOWLEDGMENTS

The committee acknowledges the helpful cooperation of those dietitians who submitted menus, and the assistance and advice of Corinne Hogden, dietitian, Presbyterian Hospital, New York.

Promoting Better Nutrition for Industrial Workers[1]

JULIA KIENE

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THE Health for Victory Club of the Westinghouse Electric & Manufacturing Company has as its objective, selling health—adequate health for every war worker's family. We accomplish this by means of the following:

1. Monthly club meetings for wives, sisters, daughters and mothers of war workers, and for managers of boarding-houses where war workers are living.
2. The basis for these monthly meetings is the "Daily Food Requirement Chart."
3. Only one section of this chart is discussed at a single meeting.
4. All scientific and factual subject matter is reduced to simple, understandable terms so that the homemaker will understand clearly the importance of adequate health, and the material presented is sufficiently practical so that the women can go home and make immediate use of the information.

Briefly, our object is to teach better nutrition by teaching practical application. Moreover, the planning which preceded the formation of the Health for Victory Club did not begin after December 7, 1941, for early in the summer of that year the Home Economics Department of our company set out to prove that the folks of Mansfield, Ohio, were not among the 40 per cent who were not receiving an adequate diet. We decided the most effective way to prove this was to survey grocery stores, independent stores as well as supermarkets, and from purchases made we could fairly accurately determine the eating habits of the Mansfield families. Since our company was the largest industrial concern in the city, we felt that by such means we would also have an opportunity to observe a cross section of the eating habits of our own employees.

The weeks spent on this survey were most enlightening. We found too many baskets pushed up to the cash register without benefit of fresh fruits and vegetables, and too much of the meat, potato and pie variety of meal planning. By keeping a weather ear bent to conversations between housewives, we also learned that frequently the housewife wasn't too sure what the family was going to eat, even when as short a period as thirty minutes preceded the meal which was to be served. The information we gained was excellent for our purposes, as it made us realize the urgent need of nutritional information, sufficiently dramatic and simple to interest and inspire homemakers in adopting better food practices.

In attempting to analyze the problem, and at the same time determine what we could do to help, we came to the conclusion that nutrition as a subject was deadly dull to the average homemaker. If we were to help her as we should, nutrition would have to be simplified, made interesting instead of technical, and not too much even of these "interesting" features should be given at one time. Also, we would have to make simple foods, properly prepared, just as entrancing as "Baked Alaska," which in the past never had failed to draw forth loud "ohs" and "ahs."

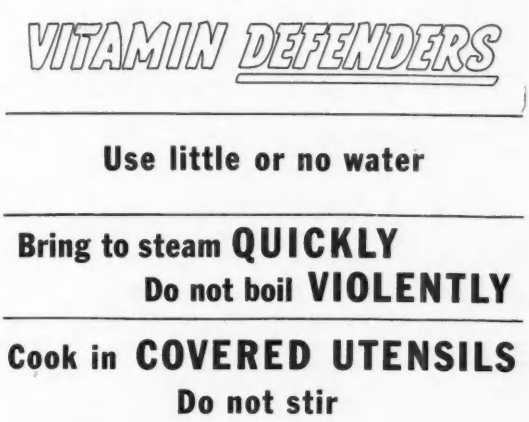
Just as we were getting our plans formulated, the attack on Pearl Harbor, which served to awaken all America to its peril, occurred. Automatically our 1942 program changed from one we thought we would *like* to carry out, to one we knew we *must*. It was urgent that we help the wives of our employees with their food problems in order to keep the production lines humming.

The Gallup Poll released late in December gave further impetus to the pressing need of a sound nutrition program. It was found that during the four-week period from November 24 to December 20, 1941, about 3,200,000 man-days of work were lost, through illness, in American industries connected with war production. Had these lost man-days of work been applied to our own Electric Appliance Division in Mansfield, it would have meant that *not a single wheel would have turned for three years*—a complete production blackout lasting three years

[1] Presented before the American Dietetic Association, Detroit, October 20, 1942.

because of illness, much of which might have been avoided if the relationship between diet and health had been better understood. Imagine a factory, building war materials, closed down for three years!

The nucleus of the Health for Victory Club is the monthly club meeting. Since our grocery store survey proved also that poor meal planning is a big handicap, it seemed only logical to build monthly menus. However, we reasoned that the menus in themselves would not be of much assistance, for without the recipes a menu isn't very valuable. We therefore decided that a menu guide each month was essential, to be built on a $14 allowance per week for a family of five, and to include all recipes for the month. We felt our biggest war job was to help the wives of employees to buy, plan and prepare foods so as to obtain and retain the greatest health dividends. Our survey had proved to us that too



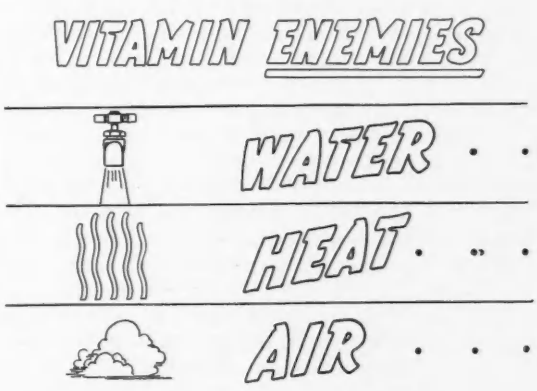
much of the food dollar was spent on "foodless foods" and when served to the family they were all too frequently "fire-weary."

When the plan was presented to our management they enthusiastically gave us permission to go ahead, as did the Labor-Management Committee of our Electric Appliance Division. The Women's Auxiliary of the Labor Union worked untiringly in interesting the wives of employees in what they termed "essential information necessary for more quickly winning the war."

Our first meeting was held February 26, 1942, and despite a sleety day and due largely to the work of the Women's Auxiliary, 350 wives of our employees attended the meeting, and when the plan was presented to them, they wholeheartedly endorsed it. This great army-in-aprons quickly realized that if it took 17 men at home to keep one man on the firing line equipped with all his needs, theirs was the responsibility of keeping these 17 men on the production line.

At this meeting, the women themselves gave these group meetings the name "Health for Victory Club." They also felt they would rather have one meeting a month, and at each meeting stress just one thing. They would then return to their homes, and put that one new food principle into practice. One new thought each month would keep them from becoming confused by attempting to assimilate too much information at one time.

This nucleus of 350 women started a plan which now extends not only to the various plants of the Westinghouse Electric & Manufacturing Company but also to some 300 war plants over the country which heard of the plan and wanted to do the same thing, using our material. Since these other war plants do not have home economists to direct the meetings, utility companies are loaning their home economists to conduct Health for Victory Club meetings for war plants in their territories.



We haven't exactly "jazzed up" the subject of nutrition, but one of our cardinal rules is never to be profound in our presentation. For instance, our first meeting is based on vitamins, and their need in the diet. First, we have to prove that vitamins are not a fad, which we do by showing that even before America became a nation, illness was being cured by change of diet. We tell the story of Dr. James Lind, the young ship's doctor in the Royal Navy, and how he licked scurvy in the Royal Navy; of Dr. Eijkman and beriberi; of Dr. Mellanby and rickets; and Dr. Goldberger and pellagra. We cook potatoes at this meeting to show what we mean by protective and careless cooking. Since many homemakers stated that they did not have utensils suitable for doing a job of protective cookery of vegetables, at the next meeting we used a cut-down No. 10 tomato can, to prove it was not the utensil so much as the person operating the utensil.

So, through all our meetings we attempt to prove, as interestingly as possible, that the right way is, in reality, the easy way, and to help put this over we

use large colorful charts which are not exactly cartoons, but which could certainly not be described as staid or dull.

One of the production men in the Electric Appliance Division takes our subject matter and dramatizes it as effectively as he dramatized a sales program; for we are in a sense still selling, but instead of selling merchandise, we are now selling health, which requires high-gear operation if the message is to be effective.

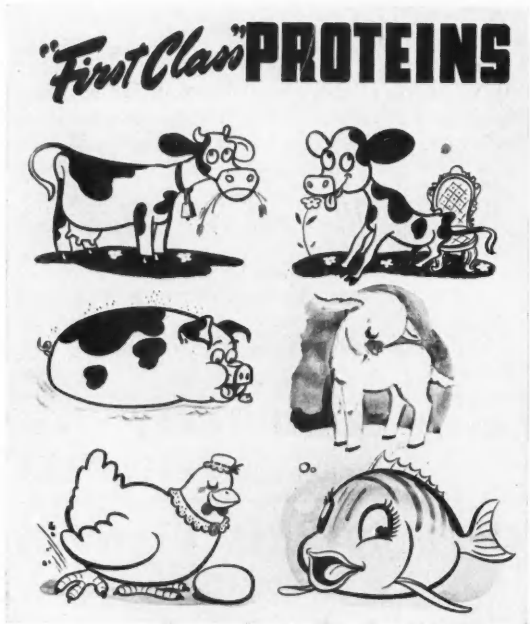
We don't expect this nation-wide "army-in-aprons" to consider themselves as nutrition experts. In fact, we don't want that. We only hope that at the conclusion of each lesson every homemaker will have a better working knowledge of the scientific facts about food, and the important role it plays in the adequate health of the men in the war plants. The program is being planned with the intention of continuing it for the duration of the war. As more and more foods are rationed and these 6,000,000 women get into war work, the program grows daily more essential, but it must be kept abreast of the changing needs.

To ensure that the home economists loaned by utility companies thoroughly understand our monthly programs, the Westinghouse home economists each month put on the current month's meeting for the utility home economists so that they can see it in operation. It is recommended that each month's lesson be learned verbatim, for these meetings are timed to the second, and "ad libbing" might ruin the dramatic spots built into each lesson plan.

Never do we *preach* better nutrition. We are war workers, talking over our mutual problem: how best to keep the production line moving.

It is difficult to stay "on the beam" when reducing scientific facts to simple, everyday terms, so every lesson is first checked with authoritative sources for accuracy and method of presentation. We cannot afford to *seem* scientific; neither can we run the risk of misinterpreting scientific facts.

Some of the charts which we use are Vitamin Charts, by means of which we take up the subject of vitamins, and dramatize it under the headings "Enemies of Vitamins," and "Defenders of Vitamins." Our milk charts help prove why milk is considered almost the perfect food. With meat rationing upon us, the meat lesson had to accomplish several things: allay any panic about not having sufficient meat; and teach the homemaker how to buy meat, how to care for it in the home, and how to prepare it. Had we gone into a detailed story on "first class" proteins, amino-acids, hormones, etc., we would have defeated the purpose of the meat lesson, so instead we caricature "first class" proteins in the hope that by such means we will help the homemaker to remember why meat is important.



Food is a pleasant subject and one that has a definite appeal to the emotions, but nutrition as a subject is dull to the uninitiated. We must keep these homemakers amused rather than bored and therefore we purposely plan meetings with entertainment value.

Rating Technicians in Service

The personnel of the X-ray and clinical laboratories, and the physiotherapy and nutrition departments . . . perform services that receive a deserved recognition in the professional care of the patient.

In the hospitals of our armed forces, no less than in our civilian hospitals, will the services of the trained technician be needed. It is only proper that when they are called into active service a rating commensurate with the importance of their services and the degree of their training should be provided. They should have the same ratings and perquisites of the trained nurse in active service. . . . It is good policy, and one generally adopted when possible to assign the soldier to duties which by reason of training and experience he is best qualified to discharge. When so assigned, provision for his proper rating in the service should be made. This is but simple justice to which the trained technician is properly entitled.—*Editorials, Hospitals, March, 1941.*

The Dietary Treatment of Functional Hyperinsulinism[1]

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THAT the symptoms of hypoglycemia, so familiar in diabetics receiving insulin, could occur spontaneously in nondiabetics without the administration of insulin was first demonstrated by Seale Harris in 1924. He reported three cases in which hypoglycemic reactions occurred in nondiabetic patients. To this condition he applied the term "hyperinsulinism" because he believed it to be due to oversecretion of insulin by the pancreas. Since, however, there are numerous specific causes of spontaneous hypoglycemia (1), the term hyperinsulinism should be reserved for those cases of clinical hypoglycemia which are the result of insulin excess due to insulin administration or to pathologic hyperactivity of the islands of Langerhans. The term functional hyperinsulinism has been applied to those cases of spontaneous hypoglycemia which appear to be due to intermittent, transitory increases in insulin production without recognizable pathology in the islands of Langerhans. According to Conn (1), from 80 to 90 per cent of all cases of spontaneous hypoglycemia fall into one of three groups; namely, functional hyperinsulinism, organic hyperinsulinism and hepatic disease. This paper deals with the dietary treatment of functional hyperinsulinism. It is the type of spontaneous hypoglycemia which responds most satisfactorily to dietary control.

DIET THERAPY

Of the various types of therapy proposed, the dietary management of functional hyperinsulinism has proved the most successful. An interesting variety of dietary régimes have been suggested in the medical literature. Patients have usually discovered that the ingestion of food would relieve an attack. Physicians realizing the nature of the attack have concluded that a high intake of carbohydrate was desirable. The results, however, have not been generally satisfactory. While an individual attack is quickly relieved by the ingestion of carbohydrate, a more severe attack is likely to occur several hours after such procedure. It is now generally agreed that the feeding of large amounts of carbohydrate stimulates the pancreas to increased secretion of insulin which in turn lowers the level of the blood sugar. Thus, although the ingestion of carbohydrate offers temporary relief of symptoms, a second more severe reaction may follow. When the blood sugar level of the normal individual rises coincidentally with the absorption of carbohydrate, there occurs, within two hours, a secondary fall of the blood sugar. In functional hyperinsulinism this normal mechanism is exaggerated and a transitory severe hypoglycemia occurs. Consequently, therapeutic measures have been designed to prevent postprandial hyperglycemia.

John (2) has suggested the use of insulin along with a low-carbohydrate diet. Ten units of insulin are given one-half hour after each meal. A typical diet of this régime consists of approximately 100 to 140 gm. carbohydrate, 60 to 80 gm. protein and 2500 to 3500 calories. John's plan is an attempt to prevent the postprandial rise of the blood sugar, thereby lessening the possibility of secondary hypoglycemia.

Waters (3) suggests a high-fat, low-carbohydrate diet with six feedings. Harris (4) uses a diet containing from 90 to 120 gm. carbohydrate, 60 to 75 gm. protein and about 2250 calories for an adult of average height and weight. This plan calls for from five to seven feedings. For the underweight adult he advocates a diet of about 3000 calories. This consists of from five to six feedings with the daily intake averaging 90 gm. carbohydrate, 200 to 300 gm. fat and 60 to 75 gm. protein. Clark and Greene (5) have also reported good results with the use of a high-fat, low-carbohydrate diet.

Conn (6) advocates the use of a diet high in protein and low in carbohydrate. In 1936 he reported the advantages of such a plan and has had continued clinical success with it. Working with Newburgh (7), he found that there was little or no rise in the blood sugar of normal or diabetic individuals after the ingestion of large amounts of protein, despite the fact that protein yields approximately fifty per

[1] Received for publication July 29, 1942.

cent of its weight as available glucose. When equivalent amounts of available glucose were ingested as carbohydrate foods, a significant hyperglycemia occurred. A high-protein diet was therefore considered desirable for patients with functional hyperinsulinism since the glucose liberated from the protein enters the blood stream slowly and at a comparatively even rate. The diet was kept low in carbohydrate for the reasons previously indicated.

DIETARY PLAN 1

	gm.	gm.	gm.	gm.	gm.	gm.	gm.	gm.
Protein	120	120	120	120	130	130	140	140
Fat	114	135	157	180	197	219	239	258
Carbohydrate	75	75	75	75	75	75	75	75
Calories	1800	2000	2200	2400	2600	2800	3000	3200
Total Daily Food Allowance								
	gm.	gm.	gm.	gm.	gm.	gm.	gm.	gm.
Milk, whole	400	400	400	400	400	400	400	400
Fruits and vegetables*								
Group I	300	300	300	400	400	400	400	300
Group II	300	300	300	200	200	200	200	200
Group III	300	300	300	300	300	300	300	300
"Whipping Cream"†	—	30	60	90	90	130	160	200
Butter (or substitute)	35	40	55	70	85	95	100	100
Bacon, cooked weight	—	20	20	20	20	20	20	20
Eggs‡	14	13	13	13	14	14	15	16

* Group I: Fruits and vegetables containing approximately 3% carbohydrates. Group II: Fruits and vegetables containing approximately 6% carbohydrates. Group III: Fruits and vegetables containing approximately 9% carbohydrates.

For complete list of foods contained in each group *see Proximate Composition of American Food Materials*, by Chatfield and Adams, U. S. Dept. Agric., Cir. No. 549, June 1940.

† Cream ordinarily sold as "whipping cream" contains approximately 32 to 35% butter fat. Calculations have been based on 35% butter fat.

‡ "Eggs" indicate desired proteins in terms of total number of eggs per day. Substitutes for *two* eggs are approximately: Cheese (except cottage), 50 gm.; Cottage cheese, 65 gm.; Fish, fresh, uncooked, 75 gm.; Fish, cooked or canned, 60 gm.; Meat, uncooked weight, 75 gm.; Meat, cooked weight, 50 gm.

Note: Listed protein figures in both Dietary Plans 1 and 2 are within 2 gm. of the calculated figures and calorie figures are within 25 calories above or below the figure presented.

SAMPLE MENU

Protein, 120 gm.; Fat, 180 gm.; Carbohydrate, 75 gm.; Calories, 2400.

	gm.	
BREAKFAST		
Fruit, group III	100	Fresh grapefruit
Eggs	3	Scrambled eggs
Bacon, cooked weight	20	Bacon
Milk	200	Milk
Coffee		Coffee
"Whipping Cream"	30	Cream
DINNER		
Meat, cooked wt. (equivalent of 4 eggs)	200	Broiled lamb patties
Vegetable, Group I	100	Asparagus, with butter
Butter	10	
Vegetable, Group I	100	Tomato and lettuce salad, mayonnaise
Mayonnaise	15	
Vegetable, Group III	100	Wax beans, with butter
Butter	10	
Fruit, Group II	100	Strawberries, with cream
"Whipping Cream"	30	
Milk	200	Milk
SUPPER		
Meat, cooked wt. (equivalent of 6 eggs)	300	Roast beef
Vegetable, Group I	100	Head lettuce, French dressing
French dressing	15	
Vegetable, Group II	100	Spinach, with butter
Butter	10	
Vegetable, Group III	100	Carrots, with butter
Butter	10	
Fruit, Group I	100	Honeydew melon
Coffee, "Whipping Cream"	30	Coffee, with cream

Note: Salad dressings are made, as for diabetic patients, with a minimum amount of carbohydrate.

The plan herein presented consists of the use of 120 to 140 gm. protein and 50 to 75 gm. carbohydrate and fat to complete the caloric requirement of

the individual. Because of the importance of strict adherence to the diet, it is advised that all of the food be weighed for at least the first three weeks on the régime. The importance of detailed, complete and painstaking dietary instruction can not be overemphasized. The dietitian must be ingenious and give freely of her time in order that the dietary plan may be made as pleasant and practical as possible for the patient and in harmony with his own individual economic, social and dietary problems.

Dietary plan 1 presents suggested daily dietary plans containing approximately 75 gm. carbohydrate, 120 to 140 gm. protein and calories ranging from 1800 to 3200. Below these in corresponding columns are the total daily food allowances followed by the outline of a day's diet and a sample menu planned on the basis of a total daily food allowance of 120 gm. protein, 180 gm. fat, 75 gm. carbohydrate and 2400 calories. Conn suggests that a diet containing approximately 75 gm. carbohydrate be used for a trial period. If clinical improvement is not observed, the diet of approximately 50 gm. carbohydrate (dietary plan 2) is then put into effect, consisting of daily dietary plans containing approximately 50 gm. carbohydrate, 125 to 140 gm. protein, and calories ranging from 1800 to 3200. The plan of division of the total food allowance into the three meals will depend to some extent upon the dietary facilities of the individual patient; however, it is suggested that both the total carbohydrate and total protein essentially be divided equally between the three meals. A change from the weighed diet to a measured diet is not made until the patient is well adjusted to the weighed dietary régime. Choice of food and methods of preparation will, of course, have some bearing upon the adequacy of the diet. However, a calculation of sample menus from both dietary plans 1 and 2 indicates that the patient's food intake can be planned to be consistently adequate in all essentials as judged by the recommended daily allowances of the Committee on Food and Nutrition, National Research Council, May 1941. When diets in excess of 3000 calories are needed there may be a slight deficiency of riboflavin.

This type of régime has been used at the University Hospital, University of Michigan, since 1936 with gratifying results. Wilder (8) reports best results on a similar régime which is low in carbohydrate and contains 2 gm. protein per kilogram body weight.

ACKNOWLEDGMENT

The author wishes to acknowledge the assistance of Dr. Jerome W. Conn, Assistant Professor of Internal Medicine, University of Michigan, for his advice in the planning of the dietary régime and for his critical reading of the manuscript.

DIETARY PLAN 2

	gm.	gm.	gm.	gm.	gm.	gm.	gm.	gm.
Protein	125	125	125	125	130	140	140	140
Fat	123	144	166	188	209	225	251	272
Carbohydrate	50	50	50	50	50	50	50	50
Calories	1800	2000	2200	2400	2600	2800	3000	3200
Total Daily Food Allowance								
	gm.	gm.	gm.	gm.	gm.	gm.	gm.	gm.
Milk, whole	400	400	400	400	400	400	400	400
Fruits and vegetables*								
Group I	400	400	400	400	300	300	400	400
Group II	300	300	300	300	300	300	200	200
"Whipping cream"†	—	30	35	65	100	120	180	240
Butter (or substitute)	40	45	70	85	90	95	100	100
Bacon, cooked weight	—	20	20	20	20	20	20	20
Eggs‡	15	14	14	14	15	16	16	16

*†‡ See footnotes to Dietary Plan 1.

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The Nutrition Situation in Hawaii

The following are excerpts from the Locality Report prepared in the Territorial Office of the Office of Defense Health and Welfare Services, Federal Security Agency, Island of Oahu, Territory of Hawaii, covering the period January to June 1942.

THOSE nutritional needs which exist during a peacetime economy are accentuated and sharpened by new needs and new situations which arise during wartime. This is particularly true of the Territory of Hawaii due to certain unique characteristics; namely, the establishment of martial law and the implications arising from the administration of military government; the geographical characteristics of the Territory—its isolation, its dependence upon ocean-borne transportation, and its position as a Pacific outpost; and the racial characteristics of its population, resulting in different food habits in each racial group.

When one considers that increasing attention is being given in the United States to nutrition problems in order to keep the man engaged in war production healthy and strong, it is increasingly apparent that nutrition in a time of war is of utmost importance to the war effort, over and above any general considerations of maintaining a healthy nation.

Therefore, in defining a program and plan for the Territorial Nutrition Committee at this time, it is recognized that while the broad goals and principles remain constant in either peace or war, the needs become intensified when the nation is at war and the methods of meeting those needs are influenced by other developments which are characteristic of wartime economy.

For example, any educational or demonstration program which is undertaken must be considered in the light of the following implications: (1) the limitations on certain kinds of food which have been staple items in the diets of many families; (2) the greater difficulty in shopping and procuring daily food needs for the family; (3) the limitations on time for food preparation and consumption as a result of blackout regulations; and (4) the greater need for the widest possible use of island foods.

This has suggested the need of a representative on the Territorial Nutrition Committee, either of the civilian defense organization or of the Office of the Military Governor. In the latter case, such a person could represent both the military government and the Office of Civilian Defense which, organizationally, is a part of the structure of the military government.

FOOD SUPPLY

Since December 7, problems of food supply have been fraught with difficulty from the standpoint of the housewife who has been faced with temporary shortages in such essentials as meat, butter, eggs, oranges, lemons, onions, and fish. For several weeks, for example, butter was not available and the first shipments were rancid. Some meat was brought to Oahu from the outside islands but dependence was on mainland shipments for any quantity. The situation at the present time, however, is improved, and should continue to improve, according to food control authorities. Restrictions on commercial fishing in Hawaiian waters have resulted in an almost complete absence of fish in the markets—traditionally a principal item of the diet of some racial groups.

With the growing shortages in certain food items, prices during this period increased. To meet this situation the Military Governor, through a general order, has established maximum prices for beef and other items.

As indicated elsewhere much emphasis is being placed upon the fullest utilization of island foods.

The Agricultural Marketing Administration has been designated by general order as the sole procuring agency and importer for certain basic foods, "....in order to provide the civilian population of the Territory of Hawaii with an adequate diet composed of items to which consumers are accustomed, and to assure a flow of supplies sufficient for current needs and to provide a six months' reserve of those items that will keep for such period." These items are: rice; wheat flour; white potatoes; dried onions; citrus fruits (fresh); canned foods, such as evaporated milk, beef (corned and other), salmon, sardines, peas, baked beans (or pork and beans), peaches, and tomato juice; dried eggs; processed shell eggs; butter; frozen boneless beef; and dried raisins and prunes.

The procurement, storage and distribution to the retail trade of all foods not appearing on this list

is delegated to local wholesalers, importers, manufacturers' agents, etc., but all orders for such foods must be submitted to the Office of the Director of Food Control, Office of the Military Governor, for clearance and priority shipping numbers.

Such food lists are subject to revision by the Military Governor so that at any time the Agricultural Marketing Administration may be designated to import additional items where such action seems desirable in order to meet the purpose of the general order.

During April, it was reported that 2500 acres of vegetables and 500 acres of field crops were in cultivation on sugar and pineapple plantations throughout the Territory. It is expected that the production of vegetables from plantations will be 31 per cent greater than during the preceding month, with a greater variety being harvested. Of this total, 1036 acres were on Oahu, which had 445 acres in Irish potatoes, 200 acres in Lima beans, and 145 acres in sweet potatoes. According to the Agricultural Extension Service, which is working in cooperation with the Office of the Military Governor in an effort to increase diversified crop acreage in the Territory, total planted acreage of the 24 most important crops for April 1942 was 43 per cent greater than the reported acreage of the same crops in April 1941. The increased acreage was due in part to the large plantings of sweet potatoes, Irish potatoes and peanuts. The estimated production of papayas, most of which is from Oahu, was expected to increase over the preceding month. The largest tonnage of egg tomatoes ever recorded on Oahu is expected during the next few months.

Increases in such production are also expected from community, home and school gardens. The Central Garden Committee, under the Office of the Military Governor, is encouraging the development of such gardens and the response has been gratifying. Such reaction is typical of community attitudes during the emergency period—much of which is motivated by fear of a stoppage of food supply from the mainland, of which the populace had a taste during current shortages of certain food items, an attitude which in normal times could never be cultivated.

On the islands of Kauai and Maui, the shortage in the local supply of rice has resulted in a rationing plan—particularly trying in a rural area where large numbers of plantation workers depend upon rice as a staple item in their diet.

The kinds of food shortages which have existed on the outside islands vary—particularly in comparison with the situation of Oahu. This is due in part to the fact that the food supply from the mainland comes to Oahu and shipments of mainland food to the outside islands have been made only after consideration is given to the six months' supply for Oahu. Inter-island shipments are extremely limited so that an exchange of foodstuffs, to take care of any surpluses which may exist on any single island, and in turn to supply that island with needed items, has not been possible except in a most limited fashion. Hawaii and Maui, for example, with their large cattle ranches, have an abundance of beef while Oahu experienced a shortage pending deliveries from the mainland.

Food purchased by the Agricultural Marketing Services continues to be distributed through the Territorial Department of Public Welfare, with the February list including beans, cereals, corn meal, flour, evaporated milk, pork and beans, prunes, dehydrated soup and canned tomatoes. With the curtailment of certain items which previously have been staple items in the diet of certain groups, particularly Orientals, the substitution of such products as are included in the available list presents certain problems in their utilization by families receiving public assistance. Many of these families have never used such staple foods as corn meal and beans, and dehydrated soup is quite foreign to their experience. The problem has therefore been to provide instruction and encouragement in the use of those surplus foods which are unfamiliar to many.

To meet part of this problem, a Home Service Adviser has been added to the staff of the Territorial Department of Public Welfare to advise families in the use of foods now available.

NUTRITION EDUCATION ACTIVITIES

The program and activities of the Territorial Nutrition Committee have been greatly stimulated by developments since December 7. With limitations upon some items in the food supply, new kinds of food control measures, and shortened retail store hours, the community as a whole is more aware than ever of the difficulties of providing families with adequate, healthful foods. This general interest has been demonstrated through the liberal use of newspaper space for articles on "Hints to Homemakers," food production, wartime recipes, and a myriad of general stories touching the field of nutrition.

The close relationship between food supply, food control, and good nutrition has demonstrated to the Nutrition Committee the importance of maintaining satisfactory liaison relationship with that section of the military government which is concerned with food supply. A representative of the Agricultural Marketing Administration met with the Nutrition Committee and presented detailed plans of the FSCC for a six months' food supply for the Territory.

Under the sponsorship of the Territorial Nutrition Committee, which acts as a coordinating group for nutritional activities in the Territory, two significant projects have been developed. Under the guidance of the Health Education chairman, Hawaii Congress of Parent-Teachers, a demonstration project was carried out for the health education chairmen of the

local P.T.A. units on the island of Oahu. The nutritionist of the Territorial Board of Health conducted these demonstrations which were devoted to the increased use of native foods and the substitution of available foods for those which are limited or non-existent in the Territory, with an overall emphasis upon the importance of maintaining the health of the civilian population during the war emergency. With the completion of these demonstrations the P.T.A. hopes to stimulate enough interest among the local health chairmen to inaugurate similar demonstration projects in the other units. P.T.A. units on the outer island are also being encouraged to inaugurate similar projects.

The second significant educational program is being carried on by the Home Defense Committee, which is composed of a group of home economists in the community. These demonstration projects are for the mothers of children attending the ten free kindergartens in Honolulu. Approximately six sessions are scheduled for each of the kindergartens with an average of about twenty mothers attending each demonstration. In addition, the committee sponsors a daily series of articles in the two local newspapers and a daily radio program on the two local stations.

Three Red Cross nutrition courses, one designed primarily for Red Cross canteen workers, have been completed. The standard course is being adapted to local food supplies and conditions, although the main outline for the course is followed. At the suggestion of the Nutrition Committee, the Library of Hawaii is planning to hold a series of nutrition exhibits in its main building.

With the re-opening of school, the school lunch program was resumed and more lunches are now being served in spite of increased food costs. However, many schools have been obliged to increase their price for a hot lunch to 10 cents and it is felt that the other schools will soon be forced to do likewise. To offset this problem, there has been an increase in the quantity of commodities available for the school lunch program. Major problems in carrying on the school lunch program, at present, involve the difficulties in getting supplies and in transporting such supplies, the decrease in cafeteria personnel as many of the group have left for better-paid jobs elsewhere, the difficulty in obtaining fuel and the long hours facing the remaining personnel who, in addition to their regular duties, provide canteen service to the first-aid units stationed in the schools.

Food for the evacuation kit, in case of mass evacuation from unsafe areas, has been given attention by the Evacuation Committee and the home economists. The latter, through newspaper articles, have publicized the planning for such a kit and suggested the most useful contents. For example, appropriate amounts of the following kinds of food were suggested in the "Hints for Homemakers" series appearing in one of the local papers, based upon a bulletin entitled "Home Food Storage for Possible Emergency Condition" prepared at the University of Hawaii: evaporated milk; fruit juice and chocolate syrup; ready-to-eat whole wheat cereal; tinned brown bread, Graham crackers, whole wheat crackers (crackers now, however, are scarce); canned corned beef, tongue, roast beef, etc.; canned salmon, tuna, herring or sardines (tuna is also scarce); canned vegetables; glass of cheese; jar of mayonnaise; canned fruits, such as apricots, peaches, or grapefruit; and dried fruits, such as raisins, figs, dates, etc.

People are being asked to plan for provisions for 12 meals. One home economist said, "If the Pan-American Airways can plan food for 450 men for use in the Middle East and not have the food too monotonous, surely we can get together 12 good meals to take along in our flight to the hills."

The personnel of the Territorial Nutrition Committee necessitated a certain amount of educational efforts within the group in order to establish the relative importance of nutrition in its relationship to the broad field of health education. For example, the representatives of the Territorial Department of Public Welfare on the committee are very much concerned with the problems facing families receiving public assistance. These problems stem particularly from the rising food costs and the fact that certain foods, particularly those used by certain racial groups, are not now available. This latter situation, which applies to the racial groups in practically all income brackets, means that many of these people will have to accept a radical change in their basic diets. Particularly is this true of such items as dehydrated foods, which are unfamiliar to most persons in the community. In the meantime many of them are not able to cope with the present situation and their families are not getting adequate diets.

This problem, together with others of a related nature, has been laid before the Nutrition Committee for consideration. In view of the severity of the situation and the unprecedented control of civilian activities at present, representatives of social agencies have felt that their primary concern in dealing with the families whom they serve is to help them in learning to buy and cook enough of the right kinds of foods to maintain their general health. Their plea, therefore, is that instead of a program stressing the more technical aspects of nutrition, the emphasis should be on simple nutritional standards and that the work with these families should be on a realistic basis.

An expanded program of food demonstration is being sponsored by the Territorial Nutrition Committee. The consultant in nutrition for the Territorial Board of Health, who also serves as secretary

of the Nutrition Committee, has been designated as the coordinator for the program which is intended to supplement the activities already underway in this field. One of the most trying problems now facing the committee is the dearth of persons qualified to carry on certain phases of the educational program such as demonstration projects, informal illustrated talks, etc. The bulk of this work at present falls upon the few trained nutritionists in public agencies and the home economists of private utility companies. Ten volunteers, some former members of the Red Cross nutrition classes and others recruited by the Volunteer Placement Bureau of the Office of Civilian Defense for work in this field, have completed a training course in food demonstration.

It is contemplated that food demonstration projects will be organized in neighborhoods, utilizing neighborhood and community groups where practical. The use of native foods will be stressed and much attention given to food substitutions, particularly for groups whose traditional diets have been materially changed by the shortage or absence of certain foods on the local market.

The staff of the Home Economics Department of the Territorial Department of Public Instruction has just completed a course which will train high school students as emergency feeding aides in hospital diet kitchens, evacuation feeding units, and other feeding centers. The course consists of practical instructions for girls between the ages of 14 and 18 who volunteered for the work with the consent of their parents. Forty girls are being awarded certificates upon the completion of the course.

At the present time (July 1942), the food supply situation has improved to the point where a fairly substantial supply of basic commodities is now arriving for civilian use. The Territorial Nutrition Committee feels, however, that the uncertainties of war necessitate adherence to a long-time program of nutritional education and serious preparation for future emergencies arising from the war.

ADJUSTING LOCAL SUPPLIES

In meeting the grave health and nutrition problems which face wartime Hawaii, the Territory is in a unique position to meet some of these problems more effectively than might be possible on the mainland. Certain native foods, for instance, produced here in abundance, have food values which equal or exceed the traditional foods previously imported. For example, while citrus fruits, particularly oranges, as well as other kinds of fruits, have been difficult to obtain, there is an abundant year-round supply of papayas and pineapples of excellent nutritional rating. The guava season, too, provides a large supply of this fruit with a higher vitamin C content than oranges. Taro, sweet potatoes, and breadfruit capably serve as substitutes for other starchy vegetables. Taro, which is the basis of poi—traditional Hawaiian food—has many other uses and its versatility is now being stressed.[1] In addition to these native products, the Island has an abundance of limes, avocadoes and mangoes. These foods fortunately can be substituted for items in the diet, formerly considered as staples, thereby meeting certain basic dietary needs. This fact has been particularly applicable in meeting the problems of the racial groups whose basic staple is rice. Nutritionists in the Territory have been waging a campaign over a long period of time in an attempt to educate the communities to the fact that white rice used in large quantities results in an inadequate diet. At the present time only white rice is available and with the supply of this staple becoming more limited than in the past it is essential that the rice-eating groups, such as the Orientals and the Filipinos, be given assistance and encouragement in using other energy foods.

[1] *Editor's Note:* Three articles on the nutritive value of taro as a food, by Martha Potgeiter, appeared in the June-July, August–September, and November 1940 issues of this JOURNAL. Other information on the preparation of taro and typical Hawaiian foods appears in *Hawaiian and Pacific Foods*, by Katherine Bazore (New York: M. Barrows & Company, Inc., 1940), reviewed in this JOURNAL for April 1941.

PYRIDOXINE REQUIREMENTS

The requirements of vitamin A are proportional to the body weight, whereas the requirements of thiamin are proportional to metabolism. While such a difference in requirements, whether based on weight or metabolism, is unimportant to the normal animal, it becomes of importance when there is an increase in metabolism, as in fevers, hyperthyroidism, etc. Few facts have been found bearing on this point, with respect to pyridoxine, but the few that have been found indicate that the pyridoxine requirements are proportional to metabolism. György found that the pyridoxine requirements of rats are increased when kept in a cold environment, which causes an elevated metabolism. Abnormally high temperatures, which also increase metabolism, will also increase the pyridoxine requirements. It would seem that pyridoxine, like other members of the vitamin B complex, is required in greater amounts in infectious fevers, when the body metabolism is increased.—*Lepkovsky, S., writing on "Pyridoxine" in: The Biological Action of the Vitamins, p. 117. Chicago: The Univ. of Chicago Press, 1942.*

Food Habits: Their Origin and Control

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WHY one eats or does not eat certain foods and how these habits are modified are questions which raise problems having ramifications that lead ultimately into at least five distinct fields of psychology—physiological, social, comparative, abnormal, and that concerned with the process of learning—and also the fields of physiology and physiological chemistry. My discussion will be limited so far as possible to the psychological fields involved. We speak of the desire for food or say that we are hungry. How does this desire originate, or is it purely "instinctive" (*i.e.* inexplicable) as some authorities contend? Because the infant nurses and has no apparent food preferences one should not be led to the hasty conclusion that there is no explanation save "instinctive tendency." There is abundant evidence that the chain of activities called nursing or eating depends upon maturation and even upon habits which have their basis laid down before birth. Chicks, for example, whose eating habits in their early life are more nearly like their adult habits than are those of children, have been shown to go through a fairly long learning process in pecking, and obtaining food. This learning process is begun in the shell. While these facts tend to show that the act of eating involves learning, they do not throw much light on the problem of the initiation of the act. Why does the chick peck at food and what causes the infant to nurse or the adult to desire food? The answer to these questions is complex: it is partly a physiological motivation and partly psychological. Cannon popularized the notion that the basic cause underlying the desire for food was the rhythmic contractions of the stomach muscles. Other more recent experiments, however, have shown that such contractions may or may not be associated with the desire for food. The cause of the stomach contractions would, of course, have to be explained. While the exact biochemical processes are uncertain, there is evidence to support the hypothesis that the appet[1] underlying the desire for food is to be found in certain chemical conditions. For example, both stomach contractions and the desire for food are modified by an intravenous injection of glucose. Let us assume, then, that the desire for food originates in a biochemical condition. This is only the beginning of a complicated process which is influenced by a host of ideational,[2] social and habitual factors.

[1] *Editor's Note:* A term used in psychology denoting that which in connection with anticipatory thinking constitutes a desire.

DEVELOPMENT OF FOOD HABITS

While eating should normally be pleasurable activity, we actually find thousands of children who are problems for both mothers and pediatricians. They eat too little; they eat too much; they want the wrong kinds of food; they dawdle in their eating; or they refuse to eat. Although these behavior problems may arise from organic causes, in many instances they are the result of habit formation. Travis and Baruch discuss the genesis of these behavior problems. They criticise in particular the present method of feeding according to schedule and in specified amount. The infant has his peculiarities similar to those of adults, in that the infant sometimes desires food before a stated lapse of time. At one time he may be forced to eat more than he wants; at another, he is given less than he wants; at still another, he may experience discomfort as a result of waiting too long. Feeding then becomes associated either with disappointment or with discomfort and the child tries to avoid the whole business of eating. Attention given to the youngster as a result of not eating is greater than the attention he would otherwise receive. Not eating, therefore, provides a type of satisfaction usually lacking. The process of weaning may be associated with displeasure since it involves the use of utensils which may accidentally hurt the mouth. In addition, the normal body contacts which are present in nursing are disrupted when the infant is placed in a chair and not held closely.

Likes for new kinds of food grow slowly, yet in the transition period between bottle feeding and spoon feeding the parent is apt to insist that the baby eat certain kinds of food because they are good for him.

[2] Relating to the formation of mental images.

Far better, to teach by example and to avoid making the business of eating a problem. Most youngsters will eat if food is placed before them, provided no special attention is given the problem and provided substitutes are not offered. Adult eating habits are extensions of habits formed in earlier years. Likes and dislikes for certain kinds of foods are, at least partially, habit. Diet restrictions will be found in certain families, in certain local communities and in certain parts of the world, that can be explained only by custom and convention.

Although habits are very important factors in controlling the desire for food in adults, ideational factors are equally important. The normal individual who sees dirt in the salad or a fly in the jam may lose his desire for salad or jam in the future. Many disturbances of the desire for specific kinds of food can definitely be traced to anticipatory thinking, colored by previous experience or by hearing the experiences of others. The belief that various food combinations cannot be eaten with impunity arises because of a lack of knowledge of physiology. The bugaboo of ice cream and seafood, or of certain kinds of fruit and milk products, need not give the average person difficulty provided they reorganize their ideas concerning the harmfulness of these foods. In many cases of hysteria and the depressive states, in which phobias play a predominant role, there is a total loss of the desire for food.

The ideational factors in building up excesses in the desire for food are really factors which influence the manner in which normal desires are satisfied. Habits are influential in determining modes of satisfaction. We eat many times when we are not hungry, the purpose being reinforced by such desires as conformity, the urge for activity, and the amatory desire. Habits once established through any one of the secondary desires may arouse indirectly the primary desire for food. Environmental factors are very potent in the satiation of the desire for food. A hen under the condition of the same time interval of food deprivation will eat more from a large pile of food than from a small one and after apparent satisfaction, will eat again if other hens begin eating. Likewise, if offered another kind of food, the hen will begin eating again and may repeat the process five or six times. She will also eat more of mixed than unmixed food. These facts are in agreement with those observed in humans. It is obvious that the food desire can be regulated through habit formation and through control of secondary desires.

Perversions of the desire for food arise in some persons in spite of the fact that all chemical needs of the organism have been met. For example, the eating of feces and metal by some insane individuals falls in this category. Perversions may also arise because of actual needs. The tendency of rats to eat lead, the eating of bones by cattle whose diet is poor in phosphorus, and the eating of wool by sheep, indicate that these perversions may be due to chemical needs. The consumption of clay, stones and other non-nutritious material by human beings in time of famine can be attributed to the thwarting of the desire for normal food.

ROLE OF DIET SELECTION IN MEETING PHYSIOLOGICAL REQUIREMENTS

I have pointed out those things which play a major role in the formation of our diet habits; but one of the problems that remains is whether the organism is so delicately adjusted that the individual is capable, on a rational basis or otherwise, of selecting those foodstuffs which are entirely adequate for meeting physiological requirements. What will happen in this respect depends upon other conditions. We know that many people do not obtain sufficient vitamins; that others working in high temperatures have to be told to consume salt; that people in iodine-deficient areas have to be instructed to take extra iodine; that in certain parts of the world pellagra exists because of poor choice of foods; and that many people suffer a calcium deficiency even though foods rich in calcium are available. The question confronting us is: why do such conditions obtain among rational beings? In order to clarify this problem, it is necessary to refer to some of the work on lower animals as well as to that on human beings.

Selection of foods is determined (1) by their taste, (2) because they meet a physiological need, and (3) by their novelty. We prefer one food to another if it tastes better. Fortunately, our sense of taste seems to be equipped with a safety valve which prevents the over-consumption of only one kind of food, for we usually become quickly satiated with the taste of a single food. Children as well as rats will eat largely one kind of food if offered free choice, but will switch to a different kind after a short time. This random selection would normally supply all diet requirements provided all the essential elements were available in the free-choice situation and provided no special demand were made for a particular chemical such as salt or iodine. Rats will not eat exclusively of a rickets-preventing diet, even though they suffer from rickets, but will consume some of the diet in a free-choice situation; they will also choose more sugar and alcohol in their diet when engaged in greater activity, but not to the exclusion of other foods. However, if maintained on these diets they will consume less of the optimal diet and more of an inefficient diet, since the novelty of the food plays a predominant role. It would seem that physiological need plays a subordinate role in diet selection. This is true because the effects of diet change are so slow and gradual that it is impossible for the animal to associate the diet choice with the gradual change in feeling that may be pro-

duced by the diet. This fact is largely responsible for the poor health conditions which are encountered in both animals and humans as a result of poor diet choice.

CONTROLLING AND MODIFYING FOOD HABITS OF LARGE GROUPS

The modification of habits of food consumption of large groups of people carries us over into the field of social psychology. It is indeed a pressing problem and one of far-reaching importance. Many peoples throughout the world are faced not only with limited quantities of food but also with the need to substitute certain less well-liked foods for staples that have been an integral part of their diets for years. The spread of available and unusual food commodities has proceeded slowly throughout history but the intercommunication of social groups in the last hundred years has undoubtedly sped up the process and has paved the way for a more universal acceptance of many kinds of foods. More and more emphasis is placed on diet in maintaining morale among actual combatants and the civilian population. We need only to turn to recent experimentation to see why this is true. Rats suffering from calcium deficiency are irritable and tend toward convulsions. Similarly, rats maintained on a diet low in vitamins of the B complex also develop epileptic and neurotic-like symptoms which tend to disappear when these vitamins are restored. Nervousness in humans can sometimes be traced to the same deficiency. It has been shown also that animals deficient in vitamin B_1 are inferior in learning ability. Quantitative stunting will produce similar results. Almost any essential chemical or vitamin deficiency will cause some loss in mental efficiency, and there is some evidence that if parents are deprived of certain essentials the offspring are affected and never entirely recover from the results of such deprivation.

The situation, then, that confronts those in control of the food supplies of nations is complicated. They have the threefold problem of (1) supplying adequate amounts of food, (2) supplying properly assorted foods, and (3) propagandizing the population so that the varieties and substitutes provided will be utilized. The agencies of social control that have played a part in the modification of diet habits of people are religion, public opinion, and law. These are not mutually exclusive and each has had and still has its place in the scheme of things. The earlier forms of control were primarily religious. We have survival of these controls in many religious practices. The prohibitions against eating certain kinds of meat under certain circumstances or unless slaughtered according to a particular ritual may have been measures intended to conserve flocks. It must be remembered that the most enlightened people in early civilization were the priests and they undoubtedly foresaw the disastrous effect of indiscriminate slaughter of livestock. When people deny themselves meat and possibly other foods during Lent they are following a ritual that had great practical significance in ancient times. The chief difficulty in the use of religion as a means of control in present times is due in part to the relative inflexibility of religious practices and in part to the fact that groups other than the clergy have accumulated information about food that is beyond the scope of most clerics.

Public opinion, today, is probably the most potent force of control, since law, according to Dunlap, is crystallized public opinion. Public opinion is moulded by all the well-known techniques of advertising and propaganda. We have only to turn to the period about 1918 to see that it is effective. The enactment of the prohibition amendment resulted from public opinion, also its repeal, for when law is not supported by public opinion it can no longer be effective. Public opinion, even when it does not result in law, is effective in dealing with groups. The spread of information about calories and the nutritional value of mixtures of rye and wheat flour during World War I was probably more effective than the legal control of alcohol consumption. There is one disadvantage in control through advertising, in that changes to conform to new discoveries related to diet, thus instigated, take place slowly. Old habits and ideas cannot be quickly broken down even when propaganda and legal controls are used. In fact, for this reason, it is essential that care be taken in promoting through advertising or other means the consumption of foods or diets, the efficacy of which is uncertain, for once certain ideas concerning food are adopted it is difficult to dislodge them, should they be proved fallacious.

Educating the Public

Picked by Dietitian M. P. H. from New York Daily News

. . . From Dr. J. Nagler, Ph.D., director food laboratories New York Institute of Dietetics, we learn that love is a good food substitute, it being a scientific fact that people in love require and absorb less food despite the time-honored jokes about the fading appetites of the lovelorn.—*Tonics and Sedatives, J.A.M.A., Sept. 19, 1942.*

Some Psychological Aspects of Nutrition[1]

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IT HAS always been surprising to me that psychologists have not paid more attention to the problems created in the human mind as a result of individual differences in the use of foods. Psychologists have largely ignored the problems of food preparation, kitchen administration, and dietetics as they apply to psychology; yet psychology and psychiatry could answer many of the questions which arise in the proper feeding of a population.

Nutrition and psychology are very closely related and this relationship can easily be demonstrated. It is within the province of the psychologist to find out, for example, why Mr. A. likes spinach and Mr. B. does not, or why the housewife can eat hearty meals when she goes out but cannot enjoy her own cooking. These situations are primarily psychological and differ from the problems of allergy, of food sensitivity, or of individual differences of digestion which are primarily physiological in nature.

As a psychiatrist, I have had the opportunity of seeing the reaction of patients in mental hospitals to both poorly prepared and well prepared foods. As a criminologist, the importance of careful preparation of food was impressed upon me by the fact that almost all prison riots begin with complaints about food. I must admit, of course, that the food itself is not the only reason for such riots, but when the atmosphere in a corrective institution becomes tense for other reasons, one bad meal is sufficient to bring about a serious, violent situation.

Nutrition, to the psychologist, has an important bearing on mental attitudes and emotional states. Many marriages are wrecked because of poorly prepared food, food incompatibilities between the two partners in the marriage, or inadequate nutrition. Children, too, become problems because of the food situation in the home. Children's feeding habits have a great deal to do with the emotional adjustments of their parents. A child's lifelong attitude toward his parents has been known to be warped by his having been forced to eat something that he did not like. A mother who is adept at entertaining and giving children food that they enjoy at parties may be able to tie her children to her emotionally in a tight and wholesome fashion, whereas another mother, who cannot keep her children at home and cannot entertain and feed them to their liking, loses emotional contact and finds herself at odds with her children.

[1] Presented before a Seminar on Nutrition, Iowa State College, Ames, June 16, 1941. From the Psychopathic Clinic of Recorder's Court, Series P. D. No. 1.

FOOD LIKES AND DISLIKES

The psychologist is interested, for example, in determining the effect of food likes and dislikes on nutrition. At present I am making a study of the patients who come through our psychiatric clinic as subjects, in which the observations are controlled by means of questionnaires and information with regard to their eating predilections obtained from other individuals of the community. I have been particularly interested in determining what foods were universally disliked as well as what sort of person regarded a given article of diet with aversion. Spinach, for instance, was not a universally unpopular food, I discovered, although many men did dislike it.

In a total of 102 persons whom I interviewed, I found that among men (67 cases) meat was universally liked; among women (35 cases), although meat was definitely in favor, cream cheese and canned fruit were well up on the list. This is not the place to analyze the meaning of these findings which superficially indicate that the general liking for meat is partly an inherent one, since humans are presumably carnivorous animals. Why so many of the women in my group had a predilection for cheese and sliced pineapple, canned peaches, and other articles of similar ilk is more difficult to explain, except perhaps on the basis of the fact that they are easier to prepare.

What is more important, of course, than the mere

presence of likes and dislikes is the effect of these upon the general nutrition of a person being studied. Dealing with individual cases in the clinic, I was able to find among them a number who, because of food fads, were starved for certain vitamins or other dietary essentials, in particular, vitamins A and B_1.

FOOD AND MORALE

Another study which we have made is one which chiefly concerns the effect of feeding on hospital morale. The word "morale" has been much used recently to indicate a favorable state of mind in relation to the demands of war. In psychiatry, morale is a familiar term, and psychiatrists have long been aware that certain features of the environment of insane patients improve or depress their mental condition. Music, color, immediate surroundings, entertainment, all have been studied, but food has been somewhat neglected. One reason is that the hospital superintendent has been too busy with other recent developments in the therapy of the insane. He has therefore been willing to turn over the problem of food to a steward, who very often knows little of either nutrition or dietetics. Sometimes the steward is merely a purchasing agent, who, because he can buy a certain article of food cheaply, will try to force it upon the unwilling patients. An insane or mentally sick woman is an even more finicky eater than a mentally sick man; she will be likely to demand articles of diet that are difficult to obtain or that must be prepared in a special way.

In line with this problem of morale, military morale, paramount at the moment, is favored by carefully prepared and adequate amounts of food. But the question of what foods to give an army is a very intricate one. Food which is highly nutritious may disagree with the habit patterns or interests of the soldier, and he may refuse to eat the food which is best for him. On the other hand, he may desire foods which are not good for him and if he does not get them he may react unfavorably.

REASONS FOR INDIVIDUAL TASTES IN FOOD

The individual differences which must be taken into account in dealing with the psychology of food are an important consideration. It has been my experience, in looking over most books on nutrition, that human beings are dealt with as having no personal differences in the matter of food likes and dislikes. Yet it is these very likes and dislikes which are of such concern to the homemaker or institutional manager.

These individual preferences are influenced by economic background, esthetic training, educational conflicts, national, regional, religious and age differences, and differences in childhood training. Differences in food tastes due to national background are really very great. The Italian, for instance, stresses the farinaceous and the Scandinavian the piscine. However, the conflicting food tastes of a married pair are not necessarily due to an emigrant background. They, themselves, may never have seen Europe, but if the parents of each were accustomed to eating the foods of the country of their origin the husband or wife, in turn, has probably grown used to that type of diet. Again, a child may be placed temporarily in a typical American home where he eats food characteristic of New England; when he returns to the type of food prepared by his European-born mother, the food and other factors, largely emotional, may cause him to reject his parents and become a problem child. Racial differences, however, tend to become less as the number of generations of a family in this country increases.

There are marked regional differences, too, as indicated by such books as Berolzheimer's *Regional Cook Book*. The Negro who comes from the South wants his "chitlins" and other special articles of diet, and in catering to two or more racial groups in the same institution one has to bear such differences in mind. Marriage between representatives of groups with such widely divergent food habits often gives rise to later conflicts.

Childhood training with regard to food habits, of course, is of great importance. Many children learn to decide what they like to eat by observing the food about them. As adults, they are likely to prefer food to which they were accustomed as children. The establishment of food habits in the child is effected chiefly by imitation. A well-trained child, it should also be noted, under ordinary circumstances, arrives at the table sufficiently hungry to eat everything that is served to him and this develops a rather cosmopolitan taste in food or at least a tolerance toward all the foods served in his home.

The physiological and psychological aspects of feeding children have received a good deal of attention by child psychologists. A spoiled child or a problem child may develop food habits which will be a nuisance to him and his associates the rest of his life. Only too often children are forced to eat when they are not well, when they do not have the right emotional attitude, or when they are tired, all of which may arouse a dislike for an article of diet or for eating in general which has nothing to do with the child's basic habit pattern.

So far as possible, within the limitations of facilities and money, the food quirks of abnormal as well as normal minds should be catered to. We must recognize, however, that the food tastes of the majority of the inmates of institutions for the feeble-minded, for the impoverished, and for orphans, do not tend to be hypercritical. The food need only be palatable, sufficiently varied, and of sufficient quantity.

OTHER ASPECTS OF THE PROBLEM

In viewing the problem from the standpoint of food preparation, which is an important aspect, the educability of those who prepare the food should be given consideration. In addition to those who are congenitally uneducable there are others who cannot be trained as cooks because of an acquired inhibition. I am reminded of a young woman who has an abhorrence for the kitchen because she saw her adored mother forced to do her own housework after the death of her father who had been the means of support. Back in the patient's mind was the idea that she never wanted to have to do what her mother did after the father's death, so she rejected housework completely. There are others who have a basic feeling of inadequacy due to lack of proper training in early childhood, who have the idea that they are congenitally unable to cook, or who lack eye-hand coordination sufficient to enable them properly to deal with utensils.

The feeble-minded do not have sufficient intellectual endowment to make it safe for them to turn on a gas stove, and they cannot boil water without scalding themselves. Nor can they be trusted to follow a recipe and produce palatable food. The insane, of course, should not be allowed in the kitchen unless this is approved by a competent psychiatrist who is in a position to say that they will not try to injure themselves to secure attention, to commit suicide, or to act on some impulse which might harm others. Individual attention should be paid those whose native mental endowment is not more than that of a seven or eight-year-old child. They are able to cook without getting into trouble, but they follow directions slowly and prepare food which is palatable only if they are given specific, careful instructions.

When advising our domestic relations cases in the clinic about dietary matters, we have before us all the background data. We find that the economic background must be carefully analyzed as it often brings to light incompatibility in dietary interests. A husband or wife, for instance, may demand rich fare to compensate for the economic insecurity of their childhood. Another point in harmonizing psychological attitudes is to adjust the family meals so that basic likes and dislikes of two or more members of a household will be catered to without too much expenditure of time and money. It must be admitted that there are some husbands who won't like anything the wife cooks, no matter how much some guest might have admired it. In such cases friction due to other causes has become so great that the dietetic problem can not be solved without first solving all the other emotional situations of the family.

From a psychological standpoint, the diet should be viewed from the following aspects: nutritional quality, quantity, palatability, budget limit, variability, adjustment to individual tastes, and economy of time and effort. The nutritional quality of the diet, to me, is chiefly of importance in dealing with malnourished individuals who present psychological symptoms. Not only should a meal satisfy nutritional needs, but it should also give a feeling of satiety which in itself contributes to a sense of well-being. A study of individual differences reveals that some people eat more than they need from a nutritional standpoint alone. It may be that they need, fully as much, from the psychological point of view, to eat until they feel satisfied. One should be able to feel well-fed, however, without being replete or "stuffed." In this connection I recall an instance in which, due to the enticing food in his own home, a man was not re-elected to a county judgeship because he invariably fell asleep on the bench. We corrected the situation by advising him to have his large meal in the evening and to restrict his diet to the minimum at noon. He did this and when the next election was held he was sufficiently alert to get back on the bench, and to stay there because he was able to stay awake.

Another consideration concerns the size of portions served. Some people cannot eat if the plate is too full. Others feel they are being cheated if they do not have a crowded plate. Men constantly complain about what they call "tea-room portions" while women prefer servings a great deal smaller than those pleasing to men.

Those concerned chiefly with the therapeutic aspects of diet might profitably consider the psychological aspects of the special diet they prescribe. Too often the physician prescribes a reducing diet which lacks sufficient bulk and leaves the patient not only drastically undernourished but also discontented and uncomfortably hungry. It is my opinion that if physicians who prescribe such diets and dietitians who fill the prescriptions would bear in mind the psychological approach, reducing diets would not be the problem they are today. If food restrictions are not too drastic at the beginning, a sense of satisfaction in the gradual reduction in his weight will encourage the patient to continue the diet. No matter how strict, of necessity, a diet may be, the use of substitutes to freshen and enhance the menus and other ingenious devices should be encouraged. To keep a diabetic eating monotonous food requires more than merely urging or threatening him with what will happen if he does not stay on his diet. The monotony and routine of such diets can be easily overcome by a greater diversification in the selection of foods and methods of preparation. Even in institutions, too little attention is directed toward making the restricted diet interesting and pleasing; stress is laid chiefly on the physiological aspects.

From the standpoint of educational psychology,

cook books, after a cursory analysis, present some problems. The ideal cook book, perhaps, has not yet appeared. The volume should be relatively complete and include, as does *America's Cook Book*, basic recipes with variations. I feel, too,that there should be better preparatory courses for prospective brides. Many do take courses in housekeeping in special schools which, in a short period of time, are supposed to train them adequately in simple cookery. I do not believe this is possible in short courses and therefore suggest that training in nutrition and food preparation should receive more emphasis for young women. There should also be a greater opportunity for housewives to study the simple physiological and psychological principles of nutrition. Yet up to now comparatively few women's meetings have been motivated by an interest in foods to the extent that they are by the so-called higher arts—music and literature. If the interest of housewives is to be aroused, such meetings should have some entertainment in addition to instruction in the preparation of food. In order to appeal to such an audience a definitely useful way of improving their cooking should be offered.

The subject of psychology as it relates to diet, nutrition and food preparation is as intricate and as interesting as anything in medicine or psychology and it is my hope that this presentation will serve as a rallying point for two groups of specialists: the psychologists and the nutritionists.

School Lunch

The first semester that hot lunches were served in one Indiana school, the 113 pupils gained half a ton in weight; soaking up vitamins and body-building foods that kids seldom find in paper bags and lunch pails. In a Minnesota school, three weeks after a similar program assured identical, nourishing meals for every youngster, a student policeman assigned to the cafeteria turned in his badge. "More food, no fights," he told the principal.

Similar stories come from most of the 93,000 schools where 6,200,000 children in the past year have been getting the stuff bright eyes and pink cheeks are made of. They got it, just like their teaching, without regard to race, color, creed or means.

What does the school-lunch plan cost? That depends on the community; success in obtaining WPA or other free labor; whether all or only part of the youngsters are fed. Feeding all is most desirable and most in vogue. Parents who can pay contribute the few cents each meal requires—from three to twelve, average six. The school usually collects a lump sum at intervals and issues tickets to all kids, so none know who pays and who does not. Up to 50 per cent of the food is bought locally to supplement the AMA's free commodities, and often is contributed by parents in farming communities. Sixty per cent of the lunch-program schools are rural. In one Arkansas town, after the parent-teacher association had raised money for kitchen equipment, a community garden produced 6000 cans of vegetables, and the pupils, on their own, fattened a bull calf for steak, roast and stew meat.—*Faught, M. C.: The Kids Aren't Hungry Any More, Saturday Evening Post, July 4, 1942.*

The Role of Women in the War Effort

The job of mobilizing American women for the war production effort is not only a matter of arousing women to the need for their services, but one of carefully channeling the great wealth of eager and capable woman power we have to the places where it can do the most good.... The Women's Policy Committee was organized to represent women's interests in the development of the national manpower and to help the War Manpower Commission formulate policies which would most successfully promote women's participation in the war effort. It is not an advisory committee, and it will be concerned with the development of broad policies rather than the details of operation. It will be our job to review policies affecting women which are under consideration by the Commission and to make our recommendation to the Commission. We also have the responsibility of initiating and formulating policies concerning the participation of women in war production for the consideration of the War Manpower Commission....

In the training of women we can learn much from Britain. Women were not included in government training programs during the first war year, but in January 1941, a few months before women were first registered, the government began to urge the technical training schools to establish training courses for women. Profiting by its experience with men, however, the British Government's chief emphasis has been on training women in the plants. In this country, training courses have now become a part of the government's plan for preparing workers to give their best service. Federal funds under the U. S. Office of Education are used for war training on two levels: college grade and less than college grade. But until recently these courses have not been as available to women as to men. Between July 1940 and the first of this year, fewer than 1% of the 1,788,000 workers trained in vocational classes were women. Figures for the spring of this year show an increase to 4%. In fact the present policy of the War Production Board regarding the training of women expressly states: "The employment of women shall be facilitated to meet the needs of the war program. This necessitates the immediate extension of defense training to women on a basis of equality with the training of men."...

In regard to hours, we can again profit by British experience; after Dunkirk 70 hours was common—but production fell off. These have now been reduced to 48 or 50, which has been found to yield maximum results. In this country, opinion and experience differ, but the Princeton survey, reported by Miss Helen Baker, shows that 53.9% of 128 companies recently polled, favor a 48-hour week. Of the other 46.1%, more favored a week longer than 48 hours than favored a shorter one. There is no ideal work week common to all industries. We must consider the physical effort involved in various operations, the intensity and pace and general working conditions....

But perhaps your greatest field of activity, and the one most sorely needed at this time, is in the area of community services. Since Pearl Harbor, in New York City alone, the juvenile delinquency rate has risen 14%—and it had been steadily declining for the preceding ten years. This has been attributed to the decrease in recreational and service facilities brought about by the transfer of volunteer and professional workers to so-called essential work. To some extent it is attributable to the decrease in parental influence due to the draft and the employment of mothers. We cannot let this continue, nor can we expect to attract all the married women we need unless adequate care is provided for their children. The individual is helpless to help herself in this matter—it requires concerted action by community groups to relieve the working mother of the strain occasioned by the departure of her husband to the front and of leaving her children alone eight or nine hours or more a day....

Much, of course, depends upon the attitude of individuals. We will need mobile people, flexible people, people who can meet change with a spirit of adventure and enthusiasm and people with a sense of social responsibility. With such attitudes there will be no question of "either-or" in respect to postwar jobs. So much will need to be done that we will need every person willing and able to work.—*Excerpts from an address by Margaret A. Hickey, Chairman, Women's Policy Committee, War Manpower Commission, Washington, before a Luncheon Conference sponsored by the National Board of the Young Women's Christian Association, the National Women's Trade Union League, and the National Federation of Business and Professional Women's Clubs, Roosevelt Hotel, New York, September 24, 1942.*

Editorial

FRANCES MACKINNON, PRESIDENT OF THE AMERICAN DIETETIC ASSOCIATION

Each year the members of the American Dietetic Association have the privilege of honoring one of their associates by electing her to the presidency. Election to this high office constitutes an award of merit, the tacit acknowledgment of outstanding ability and devotion to duty and to the advancement of the Association. Acceptance of the office, today, more than ever, signifies in addition both courage and selflessness, for it entails long hours of serious application, a ready wit and "the will to do, the soul to dare."

Fortunate are we that our Nominating Committee was so keenly intuitive as to select Frances MacKinnon as the nineteenth President of the American Dietetic Association. Now, at this critical hour, and while the public health interests of the Association are being expanded and intensified, it is timely, indeed, to have as President one who firmly believes that "nutrition can be used as a precise instrument in maintaining health" and who exemplifies this belief by practice and precept. Happily, too, the roots of her career were implanted in her hospital and clinic experience under the tutelage of Dorothy Waller and Dr. L. H. Newburgh. Here, in the clinic, she could legitimately test on man the theoretical premises of her university training. Miss MacKinnon spent ten years in the hospital field before returning to her earlier interest, public health, an interest which, like a tenuous yet resilient thread, ran through the fabric of her experience in a school lunchroom, a camp for "undernourished children," a tea room and, recently, the field of maternal and child health in Arizona.

Miss MacKinnon's academic background at the University of Montana was supplemented by graduate study at the University of Chicago and the University of Michigan, where she received the master's degree, and as student dietitian at Presbyterian Hospital, New York. She has served the American Red Cross as nutritionist in Colorado and Wyoming and as assistant to the director of the National Nutrition Service, and in February of this year she was appointed Regional Director with headquarters in St. Louis. As Instructor, Department of Hygiene and Public Health, and Instructor in Dietetics, Medical School, the Department of Postgraduate Medicine and the Dental School, University of Michigan, and later at the New York Hospital, she had an excellent opportunity to become familiar with the medical point of view and the clinical application of nutritional science. With Dr. L. H. Newburgh she is co-author of *The Practice of Dietetics* and the author of papers in scientific and professional journals.

But any sketch of her educational and professional attainments is incomplete without some mention of those qualities which give distinction to Frances MacKinnon as a person. To enliven the portrait, it should be added that her Celtic forebears blessed her with wit and verve, a buoyant and undaunted attitude that lends courage and endears her to her friends.

With Frances MacKinnon leading, the spirit of progress and service that has activated the Association since 1917 will undoubtedly carry us on to new levels of attainment.

Current Comment

DIETARY MANAGEMENT IN THE TREATMENT OF MAXILLO-FACIAL INJURIES

In the July *Journal* of the Missouri State Dental Association, Helen McLachlan, instructor in dietetics, St. Louis University Hospital, has contributed an article, originally prepared for delivery before a class in military dentistry, which is especially timely in view of the incidence of face and jaw injuries incurred in warfare and the need to feed patients with such injuries adequately. It should be added that the literature concerning treatment of maxillo-facial injuries yields little pertaining to dietary management. The author points out the possibility of increased need of certain dietary essentials over and above the normal, and of due care with regard to the consistency of the food as well as avoidance of possibly irritating substances. She gives full details for tube and oral feedings, with due regard not only to the type and consistency of food but also ease of digestion once the food reaches the stomach and intestine. Soft custard, for instance, supplies eggs in a more completely digestible form than do raw eggs and milk. Miss McLachlan indicates the proper supplements to bring the iron, vitamins A, C, and B complex, and calories up to normal requirements.

MIDDAY meals for school children have always been important but today, since millions of lunch boxes are being packed for workers in defense plants, experts in sound nutrition are all the more interested in knowing about available material, which contains menus and recipes for well-balanced meals to put in those lunch boxes.

This collection of tested recipes includes milk-rich soups which retain their creamy texture and fine flavor in thermos bottles after six hours—highly nourishing sandwich fillings which do not make bread soggy—extra wholesome salads which "carry well" and fine-flavored, low-sugar cookies which arrive none the worse for wear. These recipes obviously have a wide range of usefulness. In addition to being of value to those who are influencing what school children and defense workers are eating, the recipes are useful for home consumption.

In these recipes, Irradiated Pet Milk is a most important ingredient. By its use more of the valuable substances of whole milk and vitamin D can be included in the food. And the food costs less because Irradiated Pet Milk costs less generally than ordinary milk, much less than cream.

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Oral feedings, of course, will require a different technique since both palatability and adequacy must be considered. Ways of using substitutes for fresh whole milk, likely to be necessary under conditions of war, are detailed. For instance:

Three-fourths cup of dried whole milk, made up to one quart of liquid with water, supplies approximately the same food value as one quart of fluid whole milk. If skim milk powder is used, 1⅓ oz. fat must be added to the diet to make up the difference in calories, and approximately 1800 I.U. vitamin A should be supplied in some form.

Dried eggs may in many cases be substituted for fresh. About one-half ounce (2½ tbsp.) whole egg powder dissolved in approximately 2 oz. water (the powder dissolves more readily in lukewarm liquid) is the equivalent in food value of one egg. The powder may be substituted in this quantity in the tube feeding, but in beverages to be taken orally, the flavor of the dried egg is quite apparent and slightly objectionable if used in these proportions. About one-half of the above quantity (almost 1½ tbsp.) may be substituted for each fresh egg. More sugar is required to sweeten beverages when dried instead of fresh eggs are used.

Vegetables and fruits are given as juices, or the vegetables may be strained and diluted with milk or broth and given as soups. Vegetables vary in their contribution to the diet, the green and yellow containing carotene (the precursor of vitamin A), green leaves furnishing calcium, iron, ascorbic acid and riboflavin as well, while legumes supplement the protein of the milk and eggs and contribute thiamin and iron to the diet. It is quite likely that fresh citrus fruits may not be available as sources of vitamin C. Canned juices retain approximately eighty to ninety per cent of their original values of this vitamin (8 oz. grapefruit juice or 12 oz. tomato juice will furnish a day's requirement of vitamin C). If none of these fruit juices is available, juice from cooked greens can be used, otherwise the vitamin must be supplied as a concentrate. It will be necessary to give the vitamin in the form of a concentrate to those patients who cannot tolerate the acid of the fruit juices because of the condition of their mouths.

Cereals, as gruels, can be valuable additions to the liquid diet. The contribution which a cereal makes to the diet depends on whether it is whole grain or enriched. Enriched cereals (those to which at least thiamin, iron, and niacin have been added) are to be preferred to the unenriched milled cereals, though not to the whole grain.

Included is the following daily menu for a liquid diet, which like most liquid diets is slightly deficient in thiamin and iron and should be supplemented:

Breakfast	*Dinner*
Tomato juice	Strained vegetable soup
Whole grain cereal gruel (cooked in milk)	Banana milk shake (or other fruit-milk drink)
Coffee—if desired	Soft custard
Milk	

9:30 a.m. Chocolate eggnog 3 p.m. Malted milk with egg

Supper

Cream of pea soup
Fruit eggnog (using orange, pineapple or other fruit juice)
Tea with cream and sugar

8 p.m. Milk shake

For patients who can take soft foods, additional foods in finely divided form may be given. Eggs soft-cooked, poached, or scrambled, or minced meat, chicken, or fish, combined with a moderately seasoned gravy, are a welcome addition. Cottage cheese or Cheddar cheese melted in sauce may substitute for part of the milk (1¼ oz. Cheddar cheese has approximately the same protein and calcium content as one cup of milk). Potatoes, rich milk toast, spaghetti, macaroni, strained fruit made into gelatin desserts, and milk puddings may also be used.

If there has been great loss of soft tissue, a high-protein diet is desirable. Miss McLachlan suggests that powdered egg white be added to fruit juice, beaten eggs to broth or milk drinks, dried milk to milk instead of combining it with water, as a means of increasing the protein, also the addition of beef juice when available. She also recommends that, since very little of the vitamin D requirement is derived from foods, either sunshine or a concentrate should be depended upon to supply the extra demand when bone or tooth structure has been destroyed. For anemia due to loss of blood, minced liver (or liver soup), beef juice, gruels made from dark or enriched cereals, egg yolk, and the juices of green vegetables and fruits are most effective. The organic acids of buttermilk and fruit juices may help to relieve constipation to which many of these patients are subject, due perhaps, as Miss McLachlan suggests, to lack of residue in the diet.

NUTRITION AND MENTAL HEALTH

The April issue of *Understanding the Child*, a magazine for teachers, devotes all of its pages to the mental health aspects of nutrition. As stated editorially on the first page, "This should prove to be a helpful, practical and timely number. It should serve to help correct the contemporary too-ever-present tendency to stress the physico-chemical aspects of nutrition almost to the exclusion of the others .... The reader will secure an up-to-date picture of nutrition work as it should be practiced in conformity with mental hygiene principles."

Much attention is given in this issue to the recognition of the symptoms of mental and emotional disturbances and to suggestions as to how teachers may assist in their correction. From the point of view of a psychiatrist, Dr. Carl Binger suggests that teachers who observe children at lunch have an opportunity to detect emotional maladjustments, since disturbance in eating habits is common evidence of such maladjustments. He emphasizes, at the same time, that transient changes in eating habits, especially if they lead to no great loss or gain in weight and if they are not associated with evidences of emotional upset, may often be disregarded. In any case, direct action, such as urging the finicky child to eat or cautioning the greedy one, if the child is emotionally disturbed, often fails. In spite of rewards, bribes, threats, punishments and parental heartaches, the thin ones tend to grow thinner and the fat ones fatter. The teacher's emotional detachment may allow her to help the child where the parents have failed, according to Dr. Binger. "Her position is

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often a magical one. She can dispense praise and discipline in therapeutic doses. She can fortify and encourage and give the needed security. She can, to some extent at least, rearrange the child's environment, and experiment with other channels of emotional expression through creative work and play."

Dr. Binger concludes with the statement that "Perhaps more important than deep psychiatric insight, the teacher should be the kind of person who can extract some contentment from life and who is not ashamed to enjoy her dinner."

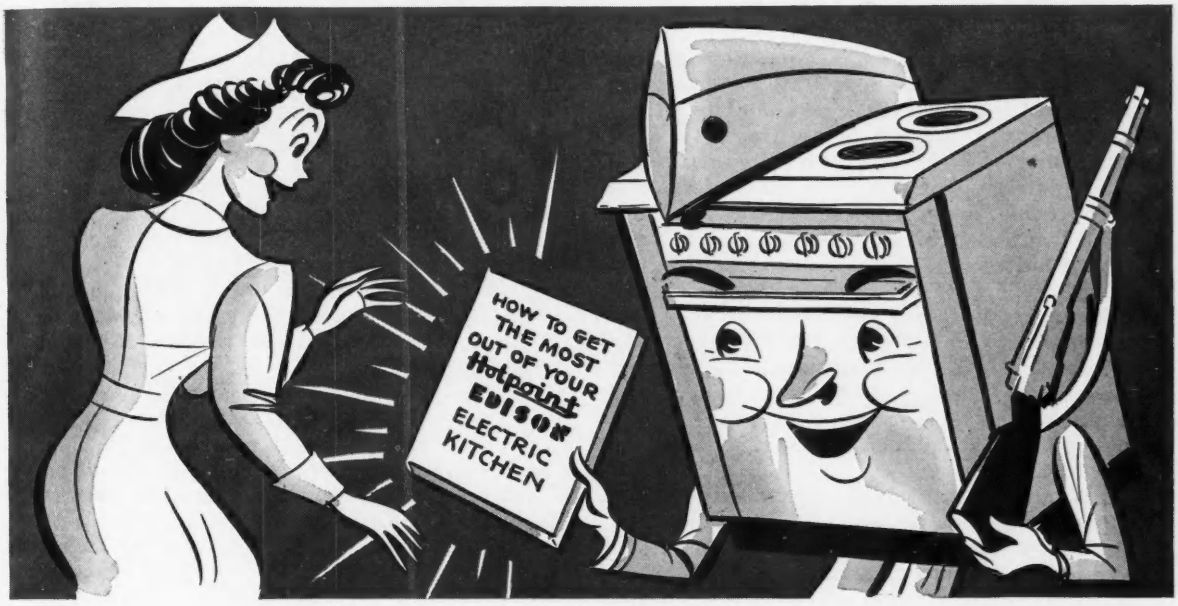
An elaboration of this last thought and further emphasis on the part the teacher can play are included in an article by Pauline Murrah, nutrition consultant, Department of Health, City of New York. If only one factor in the school environment could be chosen to influence the child's habits," writes Miss Murrah, "the teacher's own example in practice and in appearance would be my selection." In order to obtain an optimal state of nutrition for herself, the teacher should first have a physical examination, then seek to learn why she has aversions to certain foods, if any. She should have a working knowledge of some of the facts about food and nutrition, including at least some understanding of the processes of nutrition, a knowledge of the foods in our American diet which together yield a balanced supply of the materials essential to maintain a good state of nutrition, and some knowledge of human physiology in order to understand the part played by emotions in the digestion of food. As an example of an application of the knowledge of physiology, Miss Murrah suggests that "If a child who has just eaten breakfast is scolded and punished when he arrives at school, he may suffer indigestion or worse. There is abundant reason, if we need any, for a pleasant welcome to the child, and for allowing and encouraging pleasant conversation at the mid-morning and regular luncheon periods."

Another bit of physiology which the teacher should know, according to Miss Murrah, is that "human beings usually feel sleepy and often are irritable after several hours of fasting. This information may explain a child's sleepiness in mid-morning and the 'pick-up' which food gives, especially to the breakfastless tots. In addition it may explain to the teacher her own fatigue and edginess; her blood sugar may be low after an eighteen-hour fast since last evening's dinner. Introducing a real breakfast into her own routine or at least taking a mid-morning glass of tomato juice or milk with the children might accomplish wonders for her—and the children!" The observant teacher realizes that poor appetite, listlessness, loss of weight, or continuing colds may indicate malnutrition or the beginnings of a genuine deficiency state. She can often help the situation by making possible a medical examination, arranging for school luncheons where needed, conferring with the parent about the child, and distributing good printed material on nutrition. Apropos of working thus through the physician or parent, Miss Murrah says, "It has never seemed fair to me to hold the child responsible for the home conditions; he should not be given the burden of changing very radically his parents' choice of food. If he is expected to do so and fails, will he not first squirm inwardly in shame and feel discouraged over his home, or defend his parents by lying about the perfect meals they serve? It would seem to me sounder to let the doctor decide from physical evidence whether he is adequately nourished, and the nurse and the teacher look into home conditions and educate the parents."

In an article by Anna W. M. Wolf, Family Guidance and Consultation Service, Child Study Association of America, further joint efforts by parents and teachers are suggested. She states significantly that, "Parents need reassurance from someone 'in authority' like a teacher that children do not stubbornly starve themselves to death and that if given more leeway will come round gradually to eating what they need in sufficient quantities." Mrs. Wolf stresses the fact that fluctuations in appetite, food fads, and prejudices among children are common and that they are not solely the result of adult mismanagement but may exist often on the basis of physiological or psychological factors that are quite obscure and which adjust themselves according to the child's own inner changes. Therefore, "if the right foods continue to be offered—not forced—from time to time to see if the child has changed his mind about them, there is accumulating scientific evidence to show that such children are likely to take what they need for health. . . . Once the *pleasure* element in eating is gone the whole matter becomes painful or tedious and matters move from bad to worse. That is why it is so important that physicians, nurses, teachers—anyone who counsels parents—must be willing to sacrifice even some momentary vitamins to the preservation and cultivation of pleasure, or as we call it, appetite. . . . A sense of humor, a consideration of individual differences, and a break in the usual routine may be the best of appetizers. The balanced adult will know when indulgence is a constructive step and when to call quits because it leads nowhere."

Mrs. Wolf suggests that probably the first way in which teachers can be of help to mothers who complain of non-eaters at home is to recognize the dilemma and show a little sympathy. After a friendly relation has been established, there is time enough to point out mistakes. On the subject of the effect of home crises on children's appetites, especially when such crises impair for the moment the parents' morale and therefore the children's, the author makes the following sensible observation: "Usually the peculiarities of appetite that come from shock or external events of any kind are of short duration provided always that the parent leaves the child free to be peculiar for a time and does not seize on the occasion to become anxious and nagging, thus transforming a temporary state of affairs into a chronic problem."

On the general subject, "Balanced Diets and



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Balanced Personalities," Drs. Nina Ridenour and Edith Williams, New York City Committee on Mental Hygiene, have written an interesting article,[1] with emphasis again on the importance of the effect of appetite on nutrition. "Persons who eat with pleasure and for pleasure, provided the food furnishes the essentials for good nutrition, are likely to thrive better than persons whose chief concern is to eat what is good for them. Especially with children, it is a far-sighted policy to cultivate a healthy appetite and enjoyment of food, even though sometimes this may temporarily require the sacrifice of some balance in the diet." The attractive appearance of food and congenial surroundings, as well as casual conversation at table are also stressed. "Our bread and milk need to be fortified with love and security, as well as vitamins."

Not only does emotion influence nutrition, but the opposite may also be true. "When we are not physically able to do what our capacities would otherwise permit us to do, we pay a heavy price in emotional unrest and distress . . . . Good food will not insure our achievement, but it removes one obstacle in the way of it."

Nutritionists and teachers can help parents understand how widely children can vary and still be entirely normal, and at the same time how it is possible for children of the same size and age to vary widely in the amounts of foods their bodies need. Standards for different age levels are not absolute requirements for every healthy child. It is the belief of these authors that there is much room for improvement in the handling of health problems of the adolescent and that success in this direction will depend particularly upon the degree to which programs can be worked out which appeal through the adolescent's own group, as in schools or camps. They believe also that emotional factors will defeat any procedure which does not take them into consideration.

The way in which nutrition information is presented is of prime importance. The flat, positive statements of doctors, nurses, nutritionists and teachers may result in attempts by overly-conscientious mothers to force children to eat the recommended foods in the recommended quantities. "Quite unwittingly an 'I'll-be-damned-if-I-will' attitude is created. Some of the most successful programs are those that pay most attention to individual differences and emotional factors in eating. The work of nutritionists becomes increasingly effective as they recognize the psychological factors that must be taken into account in teaching nutrition, and as they help others to understand their own attitudes."

A particular case illustrating how emotional factors operate as a primary cause of malnutrition is cited by Dr. Eugene Ciccarelli, school psychiatrist, New York City. In the case cited, failure to eat was only a single issue in a generalized negativism induced by "pressure" methods on the part of the child's parents. In more serious cases, Dr. Ciccarelli states, the eating problem is found to be only a part of a definite psychoneurosis which is sometimes difficult to diagnose without a full psychiatric study; but the large number of children with eating problems which are not related to profound neuroses respond very well to changing environmental influences especially if their mothers are capable of modifying their own attitudes. Social work treatment with the mothers often yields satisfactory results.

How good food habits are taught in the Children's Medical Clinic of the Boston Dispensary is described by Mary Pfaffmann, health educator of the clinic. Teaching the principles of nutrition to parents and children, in pleasant surroundings, and in a manner to arouse the enthusiasm of her listeners, is the method employed. Charts, diagrams, and other illustrative material are used. It is Miss Pfaffmann's belief that these procedures are a definite aid to medical treatment and to mental health as well.

[1] Reprints of this article may be obtained from the New York City Committee On Mental Hygiene, 105 East 22 Street, New York, at 10 cents each.

Nutrition and the War

NUTRITIONAL ASPECTS OF FEEDING THE ARMY AND NAVY

In a paper by Colonel Paul E. Howe, Sanitary Corps, U. S. Army, read before the section on Preventive and Industrial Medicine and Public Health at the American Medical Association convention in June, it is explained that the plan of rationing followed in the Army recognizes that (a) adequacy of the dietary is the essential consideration, (b) such a dietary may be obtained in many ways, (c) there are differences in the availability of foods in different parts of the country, and (d) within reasonable limits dietary habits should be respected.

Type A ration, which presupposes that normal food supplies are available, is based on a series of menus for a month, with corresponding quantities of food indicated. The menus planned "must be balanced—nutritionally adequate—and cost not more than the value of the garrison ration at the time and place of issue. They must be prepared two months in advance in order that the quartermaster may have sufficient time to purchase the food. Menus may be modified by authorized persons in accordance with the supplies available or because of changes in the cost of the prescribed food at the time of issue. The menus are prepared under the direction of the corps area commander or by such post or station commanders in his corps area as he may designate. The menus themselves are usually prepared by representatives of the schools for bakers and cooks or by menu boards consisting of representatives of the major organizations that are to use them. In some cases the estimated quantities of food to be

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served, together with a dietary analysis, prepared by the food and nutrition officer, accompany the menus when presented to the commander for approval."

Colonel Howe states that the surgeon, in his role as adviser to the commanding officer with relation to the health of troops, checks the menus and the quantities of food prescribed to determine the acceptability and nutritional adequacy of the ration, and that in this work "he has the assistance of food and nutrition officers of the Sanitary Corps."

When troops move into areas where the type A ration cannot be provided, they may receive the type B or nonperishable ration. When local supplies are available, they are used in place of corresponding items in the type B ration.

A review of the operations of the Army in the training camps in this country during World War I and the present war indicate that we have made little if any change in either the selection of foods or the adequacy of the ration, according to Colonel Howe. The calcium and riboflavin intake tended to be lower in some camps during World War I, largely because of the composition of the garrison ration, but on the whole the ration came close to meeting today's standards. In Colonel Howe's opinion, if there are to be improvements in today's rations, they will come largely through the realization that, "while a good ration may be planned and issued, improper preparation, oversoaking, overcooking and long standing before service may destroy nutritive values and thus nullify an otherwise good diet." (In the discussion following his address, Colonel Howe emphasized the fact that well-trained dietitians know how to conserve the nutrients in cooking.) He states further that the Army's problems of planning and reviewing dietaries and advising with regard to nutrition, are not fundamentally different from those encountered in institutions or even in private practice, the two factors involved being: (1) meeting the nutritive requirements for the particular situation and (2) selecting foods that are acceptable to the group or the individual and the preparation and service of these foods in a pleasing manner. He concludes by pointing out that the use of food groups or classes and menu plans are devices which have been reduced to the danger point of oversimplification and that "a sound nutritional program is based on recognition of the fact that, while certain foods are important, no one of them is essential."

Captain Ernest W. Brown, Medical Corps, U. S. Navy (retired) read a paper before the same section entitled "Nutritional Aspects of Feeding in the United States Navy," in which he declared that "the administrative responsibility for the subsistence activities of the Navy lies in the Supply Corps, which procures, stores, issues, prepares and arranges for the service of food. This requires a knowledge of raw and processed foods, storage requirements and spoilage factors, information as to the basic facts of nutrition and ability to direct the preparation of acceptable food. The Supply Corps also conducts training schools for subsistence personnel." The term "ration" in the naval service is defined as the allowanee of food per man per day as specified by a table of allowances, established by an act of Congress in 1933, which accomplished changes in basic allowances in conformity with the newer knowledge of nutrition.

It is Captain Brown's opinion that nutrition surveys for the quantitative and qualitative evaluation of nutritive adequacy, on the basis of actual food consumption, should be considered. Dependence is now placed on experience tables supplemented by an expanded proportion of the protective foods in accordance with modern practice, and, according to Captain Brown, there has been an increasing awareness of the newer developments in nutrition in the formulation of menus by both commissary and medical officers. He points out that the calorific demands have been materially reduced in the modern Navy as a result of mechanization of many operations.

A few studies have been undertaken to appraise the nutritive adequacy of Navy rations. In 1925 it was reported that the net fuel value was 3700 calories, computed on the basis of standard food composition tables and assuming a 20 per cent waste. The same study estimated the consumption of protein as 125 gm. daily, "assuming a 25 per cent loss by waste." It was concluded that there were indications of a deficiency in protective food components. Another study (1940) showed that the consumption of nutrients compared favorably with the Food and Nutrition Board standards. However, Captain Brown notes that the validity of the comparison of these results is questionable for several reasons, even though a correction was applied by a deduction of 25 per cent on the assumption that this represents the losses in preparation, table waste, and spoilage.

Among the new vitamin sources added to the Navy ration in 1942 are: vegetable and fruit juices, fresh, concentrated and canned; and flour enriched with vitamin B_1, niacin and iron and enriched yeast. These foods are especially important when it is considered that the storage facilities of even the larger types of naval vessels are sufficient to carry fresh fruits and vegetables for only a few weeks. Submarines present special problems, too, since their patrols may extend 60 days or more and the storage capacity for provisions is so limited that the protective foods, in the form of fresh fruits and vegetables, eggs, and milk can be carried for only a relatively short period, the personnel then subsisting chiefly on meat and preserved foods, largely of the canned type.

In regard to the administrative aspects of subsistence activities of the ship, Captain Brown explains that "The commissary officer of the ship is charged with the administration of the mess, under the commanding officer. He is faced with the problem of menu planning, which involves the factors of

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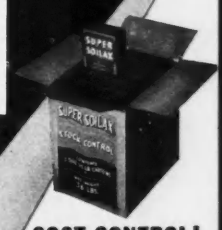

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availability of an adequate variety of foodstuffs, selection of foods fresh or canned, the itinerary of the ship and climatic conditions. He must construct a well-balanced diet which can be translated into interesting and attractive food acceptably served. The factor of nutritive value must be correlated with that of acceptability." The functions of the medical officer fall under the following divisions: (1) inspection of the galleys and mess spaces as to sanitary conditions, (2) periodic inspection of all food handlers as to physical fitness for handling food, (3) inspection of mess gear in regard to sterilization, (4) inspection of food as selected, prepared, and served, (5) examination of the menu with the objective of formulating a well-balanced dietary and (6) recommendations for the correction of any deficiencies. "In other words, he is in theory the trained technical observer of mess operations. In practice, however, this actually requires the services of a nutritionist, the medical officer's qualifications being naturally limited in the technical fields of evaluating the nutritive status of diets and of the preparation of food."

Comparing the bases of rationing in the Army and Navy, in the discussion following Captain Brown's address, Colonel Howe stated that the Army garrison ration is intended primarily as a basis for determining the money that may be spent for food rather than as a list of foods to be eaten, whereas the Navy sets certain quantities of food and adjusts the various components and alternates. It is his opinion that in both services there should be a nutritional record which would be on a par with a financial record, and which would show, through "nutritional accounting," whether the money had been correctly and wisely spent.

From the point of view of the experienced dietitian, it would be much more to the point if these papers could have properly been labeled "Feeding the Army and Navy" for that would imply carrying through the subject from the standpoint of adequate supervision not only of food selection but also of its preparation, and would cover both the scientific and technical details. Factors of waste and of preparation, though recognized in the papers under discussion, were but lightly touched upon. It would be interesting to know just what is the actual consumption of foods purchased for the armed forces, in the light of the average net edible waste, and whether the amount of waste has gone up or down since World War I. Every experienced dietitian is as much enlightened by an inspection of the edible garbage as she is by accounts of nutritional allotments on paper. In other words, the real test of the service of supply in any military operation is that materials reach their objective unimpaired. The belief, too widespread, that a biochemist, a surgeon, or an internist, even though well versed in the sciences ancillary to the art of dietetics and distinguished in his field but knowing little or nothing of actual cookery, is capable of supervising the infinite technical details involved in managing a kitchen and kitchen help, is probably as fallacious as the idea that a metallurgist, because of his knowledge of the various metals of which a plane is constructed, could competently supervise the operation and maintenance of a flying fortress.

NUTRITION FOR HOUSEWIVES

The August *Nutrition News Letter* from the Office of Defense Health and Welfare Services, over the signature of Dr. Helen S. Mitchell, principal nutritionist, contains accounts by nutritionists of several successful community programs which have been conducted in various sections of the country. These accounts furnish helpful suggestions as to methods of organizing and publicizing this type of program, such as ideas for a quiz corner at the county fair, street car cards, vegetable picnics to introduce unfamiliar vegetables, and group singing of songs featuring nutrition. The recent nutrition week programs in Dallas, Texas; St. Joseph County, Indiana; and Unicoi County, Tennessee, are reported in detail, and a suggested test to be used in the quiz corner mentioned above is appended to the letter.

Results of several food demonstrations and experiments on food habits are also recorded, and Dr. Mitchell states that results of other similar demonstrations will be printed in subsequent issues of the *Nutrition News Letter* The demonstration conducted by Dr. Kurt Lewin at the State University of Iowa, which showed that women are more likely to serve a new food when they have discussed it with other women than when they have merely listened to a lecturer explain the nutritive value of the new dish, is described in this issue, together with several others.

A booklet entitled "Fightin' Food"[1] was included in the same mailing. Addressed to American homemakers, and published in a striking red, white and blue format, the booklet was prepared by the Foods Education Department of the Pillsbury Flour Mills Company. It is a compilation of information about vitamins, enriched foods, and food purchasing and preparation, taken from various commercial and other sources. The information is presented in a form that should make it easily assimilated, the clever illustrations, unique captions, and easy-to-read tables all showing an appreciation of the psychological value of these devices in presenting nutrition facts to the layman. "What to Do About Food Fussers"; "How to Brighten the Lunch Box";

[1] Teachers and lay leaders may obtain free copies of this booklet from Foods Education Department, Pillsbury Flour Mills Company, Minneapolis, Minnesota. For others, single copies are 10 cents each; in quantities of 20 or more, 5 cents each.

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● Be glad that Kellogg Cereals appear so frequently on the tables of so many of the people you are trying to aid in your work for better nutrition. That's one eating habit you won't have to change! For every Kellogg Cereal is made of *whole grain*, or is restored to whole grain levels of vitamin B_1, (Thiamin), Niacin, and Iron. This means that *all* Kellogg Cereals meet the recommendations of the U. S. Official Nutrition Food Rules.

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"How to Cure Sugar Blues"; "What to Do for Eye Appeal"; "How to Corral These Illusive Vitamins and Minerals"; and "How We Get Our 'Go' from Fuel Foods" are some of the page and paragraph headings. It is interesting to note that almost equal emphasis is given to methods of persuading the family to eat the right foods as to the food requirements of the various members of the family. Twenty-one low-cost menus, prepared by Mary Ellis Ames, are included, with charts for each day's menus showing the approximate percentage of the day's requirement furnished by each nutrient.

In the section on enriched flour, three tables show the number of calories, the number of International units of vitamin B_1, and the milligrams of niacin in enriched white flour as compared to other commonly used foods, based on prices prevailing early in 1942. According to these tables, a penny's worth of enriched flour contains 400 calories, as opposed to 160 for navy beans, 107 for potatoes, 87 for bacon, 52 for whole milk, 29 for eggs, and so on (comparisons which we hope will not be misinterpreted, Ed.). Likewise, a penny's worth of enriched flour yields 143 I.U. vitamin B_1, as compared with 63 for navy beans, 48 for ham, 45 for sweet corn, 44 for potatoes, 26 for peanuts, 10 for beef liver, 9 for eggs, etc. Beef liver contains 2.5 mg. niacin per penny's worth; sweet corn, 2 mg.; enriched flour and peanuts, 1.4 mg.; ham, 1.1 mg.; whole milk, 0.6 mg., etc.

Another booklet included in the same mailing, entitled "Make America Strong,"[2] contains a study outline devoted to "nutrition in national fitness" for use by community groups and organizations. It was prepared under the direction of the Pennsylvania Nutrition Council, and published by the Pennsylvania State College Extension Services. Among those assisting in its preparation were Constance L. Herbst, president, Pennsylvania Home Economics Association; Dr. A. Pauline Saunders, State Teachers College, Indiana, Pennsylvania; and Florence Peters, nutrition consultant, Department of Welfare, Harrisburg. The unit plan of organization was used. Each lesson in the three units—Make America Strong, Food Is Strength, and National Fitness in Our Homes—has a list of suggested references; suggestions for speaker, leader or adviser for the lesson, whether dietitian, nutritionist, home economics teacher, or even the local grocer; and plans for activities, including the making of charts and scrap books, keeping shopping records, preparing group reports of community activities, etc. Topics for class discussion are also included. In short, there is ample material in the fourteen lessons so that an intelligent program committee of a club or other lay group could, with the assistance of trained persons, as suggested, and the references listed, arrange for an interesting and practical series of meetings. Incidentally, one of the most helpful features of the booklet is a list of recently published low-cost or free pamphlets on nutrition, food selection and recipes, with details as to how these may be obtained.

A reprint of Mary Swartz Rose's "Food After Forty"[3] was also enclosed with Dr. Mitchell's letter. It is printed in the form of a small, attractively illustrated booklet for distribution to this age group.

FOOD CONSERVATION AND THRIFT

A letter from Ruth Van Deman, chief, Information Division, Bureau of Home Economics, U.S. Department of Agriculture, calls the attention of readers of this JOURNAL to two sets of charts[4] which should be useful as teaching devices for classes in nutrition. The first set of ten 14 by 20-inch charts, entitled "Fight Food Waste in the Home" shows, by means of pictures in black and white with touches of red, cartoons, photographs, and captions in prose and rhyme, how to keep meat, eggs, cereals, etc., in good condition in order to conserve vitamins and minerals. The second series consists of ten charts which point out ways to stop waste of food during cooking and kitchen preparation—from peeling and depodding to final serving.

Two leaflets[5] prepared in connection with the Food for Freedom program for distribution to housewives, were among the enclosures in Miss Van Deman's letter. One of these has the same title as the first set of charts mentioned above and covers the subject in short, pithy statements, of which the following are examples: "Meat has its own conservation corps, the three C's—clean, cold, covered." "A dry, cool blackout suits white potatoes and onions, but avoid freezing." "Spoilage spreads as mold breeds mold, weevils breed weevils. This happens oftenest in the forgotten can or box." The other leaflet is entitled "Vitamins from Farm to You" and is a highly simplified description of the vitamins and their functions, printed on the back of a kitchen chart showing which foods contain the various vitamins. A list of "first aid for vitamins" procedures appears on one side of the chart with a list of the foods to be included in each day's menus on the reverse.

Farmers' Bulletin No. 1908, U.S. Department of Agriculture,[6] covers the subject of "Meat for Thrifty

[2] Single copies may be obtained from the Office of Defense Health and Welfare Services, as long as the limited supply lasts.

[3] Limited numbers of copies may be obtained from the Prudential Insurance Company of America, Newark, New Jersey.

[4] Available at 25 cents per set on application to the Superintendent of Documents, Washington, D. C.

[5] Issued by the Bureau of Home Economics, U. S. Department of Agriculture.

[6] For sale by Superintendent of Documents, Washington, at 10 cents a copy.

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IMPORTANCE OF

ENRICHED WHITE BREAD

Save to buy bonds!

Conserve on food to help feed our fighting men and our allies!

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Extra nourishment has been added to our greatest source of food energy! White Bread has become Enriched White Bread*—essential vitamins and minerals added. Yet it is still one of America's thriftiest foods—for the dining room table—for the dinner pail—for the school lunch box. Whenever you serve food—serve Enriched White Bread. It's thrifty! It's patriotic!

A letter or card is all that is necessary to receive your copy of ENRICHED WHITE BREAD—a popular leaflet setting forth in detail the new nutriment that has been added to bread. It includes a reprint of a government chart! Statements by leading physicians! Explains exactly why ENRICHED WHITE BREAD should be served in every home today.

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Department of Nutrition

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Meals." A general discussion of meat purchasing and storing is followed by specific directions for preparing the cheaper cuts of meat and the meat organs, including recipes for different kinds of stuffing, stews, scrapple, gravies and sauces. Recipes for quick dishes made with leftovers and canned meat, and suggestions for hot and cold meat sandwiches are also included. This bulletin should be especially useful for distribution to those who, because of the availability of the common cuts of meat at comparatively low cost, have not felt the need until now of using their imaginations in preparing palatable meals for their families, but who might venture to use the cheaper and more plentiful cuts of meat and the meat organs if they were told exactly how to cook them. Dishes using spleen, tripe, sweetbreads, beef heart and lung, kidneys, bone marrow, and pig's knuckles are among the recipes. The food value of the cheaper grades and cuts and the need for a "spirit of adventure toward trying new ways and new flavors" are stressed.

Several other publications on the general subjects of food and commodity conservation and nutrition in wartime have been prepared by the Bureau of Home Economics and other government departments, the most recent of which we are listing below for the convenience of those who may wish to send for them. A number of these have been mentioned previously in this JOURNAL. Where no price is given, no information is available as to cost, if any.

"Dried Beans and Peas in Low-Cost Meals" and "Green Vegetables in Low-Cost Meals," both issued by the Surplus Marketing Administration, U. S. Department of Agriculture.

"Root Vegetables in Low-Cost Meals" and "Potatoes in Low-Cost Meals," for sale by the Superintendent of Documents at $1.00 per 100 copies.

"Food for Growth" (for children), issued by the Bureau of Home Economics, U. S. Department of Agriculture.

"Eat the Right Food," for sale by Superintendent of Documents.

"When You Eat Out," issued by the Bureau of Home Economics, U. S. Department of Agriculture.

"Recipes to Match Your Sugar Ration," free on application to the Consumer Division, Office of Price Administration.

"Rubber in Wartime" (mimeographed sheets), issued by the Bureau of Home Economics, U. S. Department of Agriculture.

"Stain Removal from Fabrics," Farmers' Bulletin No. 1474, U. S. Department of Agriculture, 5 cents each.

"Mending ABC's" and "Save Your Clothes" issued by the Bureau of Home Economics, U. S. Department of Agriculture.

STRENGTH IS IN THE LAND

A recent publication of the Agricultural Adjustment Agency, U. S. Department of Agriculture, which sets forth the importance of soil conservation to improved nutrition and national strength, is being distributed by Minnie Fisher Cunningham of the Division of Information, U.S. Department of Agriculture.[1] Entitled "Strength Is in the Land," the booklet describes the necessity for "conservation farming" in place of the hit-or-miss type of farming of World War I, 'the scars of which are not yet fully healed." It is stated that, although not generally realized, the acreage of really good land in the United States is definitely limited, which means that holding fertility and moisture in the soil and keeping the soil in the field, as well as other procedures, are necessary for greater food production.

In the simplest language possible, and with the aid of homely but apt illustrations, the importance of soil conservation is delineated under the headings: "Life Is Rooted in the Land"; "Nourishing Food Is Important to Everybody"; "Plants Need Minerals"; "Animals Need Minerals"; "Minerals Give People Strength"; "Minerals Can Be Restored to the Soil"; "Vitamins Are Essential to Health"; "Vitamin A Is Important to Eyesight"; "Better Soil Means More Vitamins for American Diets"; and "Wasted Land Means Wasted Lives." The emphasis on the part which the Soil Conservation Service and the Agricultural Adjustment Agency can play in helping farmers to build up their pastures so that they may feed more cows and get better milk, teaching how to hold topsoil and restore minerals to the soil and thus provide mineral-rich foods, etc., is a commendable type of educational propaganda and should serve to encourage those who are engaged in farming, even on a small scale, to apply to these agencies for assistance and advice.

An example of the forthright statements included in the booklet is the following quotation from the introductory remarks: "Man's strength comes from the land. Buying the bounty of the land over store counters, it is easy for city people to take the good earth for granted. Yet thousands of years were needed to make the thin layer of topsoil from which plants and people get their food. A few hours of severe flood or a brief span of bad farming can rob the ground of this fertile soil which is so essential to life. Great nations have their roots in the earth. Land waste weakens nations. Erosion acts quietly but can spread ruin as terrible as that wrought by invading armies. While our boys fight on many shores to defend the cause of freedom, we at home must see to it that we do not waste the soil resources, which are the basis of American strength. Conservation practices defend the land and keep the soil fertile to grow rich harvests—strength-giving harvests of good food."

[1] Copies of this publication are available on application to Miss Cunningham.

The Newer Concepts of Meat in Nutrition

Meat...

and the Diet in Chronic Diarrheic States

THE functional changes occurring in chronic diarrhea, regardless of cause, are apt to exert a far-reaching influence on the nutritional state. The frequency of evacuation and the watery consistency of the stools are indicative of the hurried passage of the intestinal contents through the tract. As a result, absorption of nutrients and water is lessened, leading to dehydration and nutritional imbalance.

While the organism may call upon stored body fat to satisfy energy requirements, no such reserve is available for protein, vitamin, and mineral needs. In consequence the dietary must provide these essential nutrients in amounts sufficient to compensate for those lost.

Lean meat has been found of excellent value in the dietary of the diarrheic patient.[1] It provides protein not only of high biologic value, but also in such quantity that no excessive amount of food need be given. It contributes to vitamin and mineral requirements since it is a good source of thiamine, riboflavin, and niacin, as well as iron, copper, and phosphorus. From a mechanical standpoint, meat is thoroughly bland, hence does not unduly stimulate intestinal peristalsis.

[1]Perla, David, and Marmorston, Jessie: Natural Resistance and Clinical Medicine, Boston: Little Brown & Co., 1941.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

The Seal of Acceptance denotes that the statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
CHICAGO

Care of Electrical Appliances

Institutions for July suggests an excellent scheme for the maintaining of electric "counter" equipment. Under the heading "Don't" are listed the several important things *not* to do in handling electrical appliances, and under the heading "Do" those procedures which should be avoided if the equipment is to last for the duration. The dietitian responsible for food services could probably apply the idea to good advantage by posting cards carrying this type of information above the various pieces of electrical equipment. For instance, above the toaster, a card could be hung carrying a few items such as the following, which are among those suggested by *Institutions*:

Don't attempt to toast buns in bread toasters. Don't "sledge hammer" timing lever handle. Don't allow grease to spatter on the finish or gum up timing mechanism. Don't try to hurry toasting by releasing timing mechanism and then jamming it down again.

Clean toaster wells after toasting raisin or nut breads. Use "two-finger" pressure when lowering slice of bread into toaster. Clean crumb tray daily when toaster is being constantly used; at least once a week under any conditions. Allow toaster to run through its full cycle.

Above the waffle bakers a few items such as the following might be listed:

Don't use waffle bakers for the baking of anything else but waffles. Don't mix excessively large batches of waffle batter, as stale batter will cause sticking. Don't allow waffles to burn, as this dries out the grids, causing sticking. Don't use excessive fats, nor spill batter. Don't allow baker to stay hot when not in use.

Remove accumulations of grease and batter daily. Brush grids lightly every day with a wire brush to prevent caking, or accumulating carbon. Do this preferably when the baker is still hot. Always store batter in a cool place. If the batter sticks to the grids, increase amount of shortening in batter, or if grids are coated with carbon, recondition them by turning on baker until signal light goes out, indicating baker is hot. Excess carbon should then be removed with a wire brush, and a thin coating of vegetable oil (*not* olive oil, or butter) applied to the surface of each grid with a brush. Close baker, allowing it to remain connected and the oil to penetrate and lubricate the grids, for about ten minutes. Then pour batter for first waffle, which should be discarded since it absorbs excess oil from grids.

For the care of food warmers, the following instructions could be given:

Don't clean stainless steel with any coarse powders. Don't allow liquids to spill into wells. Don't permit overheating.

Wipe off food warmers daily with soft, damp cloth. Rinse inserts thoroughly before using.

Suggestions for prolonging the life of electric grills might include:

Don't permit overheating, which warps the grids.
Keep grids scraped clean at all times.

Elsewhere in the same issue of *Institutions* there are some sound rules for keeping refrigeration equipment in good condition. Following the statement that this equipment must now last eight to ten years where four or five may have been average before, a procedure is suggested which embodies a systematic inspection program, beginning with "preventative service" to prevent breakdowns before they start. Electrical parts of the equipment should be inspected first to detect motors "arcing out," starters and contacts worn or gapped, and power leaks. Faulty insulation in coolers of any kind should be repaired as soon as it begins to be evident. Cleaning, including washing and scrubbing regularly, serves to uncover the need for repairs. Leaks in coils, air bubbles, and low oil levels are all signs of preventable trouble.

Most common cause of institution refrigeration breakdowns is failure to defrost regularly. Too low suction pressures result when ice is allowed to form, or equipment is dirty. Power consumption doubles, and refrigeration is less efficient. Likewise, dirty motors lose power, and contact equipment will fail if metal surfaces are not bright and clean. Clean condensers should always come first, since a dirty condenser of the air or water-cooled type is as bad as a clogged radiator in an automobile. Once a week is not too often to clean a condenser, using stiff brush or gasoline if necessary. During the period when the unit can be shut down, it should be completely cleaned and inspected, a record made of adjustments, and coils cleaned. Oil sump pumps should be drained and flushed out, and refilled with new oil. Lines and grooves need thorough cleaning. Insulation both of the cooling interior and of the electrical equipment should always be renewed the moment it becomes possible for a spark to jump or cold air to leak out. When machines are driven by flat belts (since leather is becoming difficult to obtain) the belts should be aligned daily to avoid scrubbing and consequent short life. Oil applied regularly will keep such belts pliable and proof against snapping without warning. On large coolers and ice making equipment, belts must be stored in wrapping paper, sealed tight and kept dry. Oil must be kept away from both leather and rubber belting—a frequent cause of breakdowns. All of these maintenance jobs can be done by any employee without special training, according to the author of the article in *Institutions*.

The résumé concludes with the following advice: "About the wisest step the institutional manager can take is to consult the refrigeration manufacturer with regard to buying essential parts for a 'repair inventory.' If priorities allow, the institution should obtain additional refrigerant lines and refrigerant fluid, pistons, expansion valves and belting, more coils, and an extra condenser." Extra electric motors are scarce, but possession of them will assure preservation of the most vital part of the refrigeration equipment. Shops cannot for long rebuild motors now that copper armature wiring is out of the market; thus, motor maintenance, which consists of reinsulating coolers wherever they are damaged, keeping the equipment clean, and the belt in good condition, must be the primary consideration.

IN THE METABOLIC DEMANDS OF *Lactation*

According to the National Research Council, the nutritional demands of lactation present a considerable increase over normal requirements. Caloric needs are increased from 2500 to 3000 calories daily, protein from 60 to 100 Gm., calcium from 0.8 to 2.0 Gm., iron from 12 to 15 mg., vitamin A from 5000 to 8000 I.U., thiamine from 1.5 to 2.3 mg., ascorbic acid from 70 to 150 mg., riboflavin from 2.2 to 3.0 mg., and nicotinic acid from 15 to 23 mg.; the vitamin D requirement is estimated to be from 400 to 800 I.U. daily.

To provide the calories required is of course a simple matter. But to fill the needs for specific nutrients through the ordinarily consumed diet may present considerable difficulty.

Many physicians have found that New Improved Ovaltine proves an ideal food supplement during lactation. This delicious food drink aids appreciably in the caloric intake and provides a high percentage of the daily requirement for specific nutrients.

Three daily servings (1½ oz.) of New Improved Ovaltine provide:

	Dry Ovaltine	Ovaltine with milk*
PROTEIN	6.00 Gm.	31.20 Gm.
CARBOHYDRATE	30.00 Gm.	66.00 Gm.
FAT	3.15 Gm.	31.95 Gm.
CALCIUM	0.25 Gm.	1.05 Gm.
PHOSPHORUS	0.25 Gm.	0.903 Gm.
IRON	10.5 mg.	11.9 mg.
COPPER	0.5 mg.	0.5 mg.
VITAMIN A	1500 U.S.P.U.	2953 U.S.P.U.
VITAMIN D	405 U.S.P.U.	432 U.S.P.U.
VITAMIN B_1	300 U.S.P.U.	432 U.S.P.U.
RIBOFLAVIN	0.25 mg.	1.28 mg.

*Each serving made with 8oz. milk; based on average reported values for milk.

NEW IMPROVED

Ovaltine

2 KINDS—PLAIN AND CHOCOLATE FLAVORED

Ovaltine now comes in 2 forms—plain, and sweet chocolate flavored. Serving for serving, they are virtually identical in nutritional value.

• • •

Dietitians are invited to send for a supply of individual servings of New Improved Ovaltine. The Wander Company, 360 North Michigan Avenue, Chicago, Illinois.

Book Reviews

You and Your Food. By Leila Wall Hunt. Pullman, Washington: State College of Washington Extension Service, 1942. Paper. Pp. 254. Price 60 cents.

Prepared for the intelligent lay public, this book shows evidence of the author's many years of experience as professor and head of the Foods and Nutrition Department of the State College of Washington. It is a matter-of-fact, not too wordy, and withal readable treatment of the subject of nutrition, addressed to the layman, but not "written down."

Starting with the subject of general nutrition and its application to the human body, the chapters proceed with discussions of the part played by proteins, minerals, vitamins, water and roughage, followed by an explanation of the processes of digestion and absorption and a general discussion of factors affecting the utilization of food, and metabolism. With the groundwork laid, the author proceeds to demonstrate the application of nutritional science in dealing with problems of overweight and underweight and the relation of food to physical activity, and discusses certain common misconceptions about food. Chapters on acid-alkaline balance, dental nutrition, and constipation are intended to dispel popular though erroneous ideas concerning these subjects. The final chapters cover meal planning and the use of low-cost foods both at home and in industrial plants. The emphasis throughout is on an intelligent interpretation of the advertising and publicity to which all phases of nutrition are being subjected today. Sufficient explanation, without undue stress, is given for each topic. It is the author's belief, for example, that it is not necessary for the public to know the chemical nature or structural formula of the vitamins, how they were isolated, or the method of preparing the concentrates; it is sufficient if they know that these substances are essential in the diet and the kinds of foods which furnish them in sufficient quantity. Care has been taken to avoid positive statements where present knowledge of certain topics is incomplete, and the reader is cautioned against "diet-o-mania" in its various forms.

One assertion in the chapter on meal planning, that "it is difficult for the person trained in nutrition to put into plain words the necessary rules for guidance in the planning of the daily menus," is hardly a fair statement today, although it may have been true a few years ago. In fact, the author's treatment of the subject disproves this. Practical suggestions for the planning of adequate meals are conveniently set forth in the form of a numbered list, likewise guides to food purchasing. A table for use in planning adequate food supplies for various family groups is included, also an excellent description of the relation of diet to fatigue, with special reference to fatigue of industrial workers.

It is to be regretted that *You and Your Food* was not published by a commercial house, which would probably have assured it a wide circulation through advertising and perhaps through a more striking format, and which, incidentally, would have meant a more thorough job of proofreading to eliminate the many typographical errors which in some cases almost obscure the meaning. The resulting higher price per copy, however, might have counteracted these advantages. It is unfortunate, too, that the accumulated findings of recent years regarding the use of mineral oil as a laxative or in food were overlooked when its use is suggested in the treatment of constipation. It might be added here that in any event the responsibility of suggesting its use in the treatment of constipation is within the physician's province, not the nutritionist's.

In spite of these minor criticisms, which concern matters readily corrected, this is an excellent book for its purpose; in fact, it is the best or certainly one of the best of its kind now current, in this reviewer's opinion.

The Biological Action of the Vitamins. A Symposium. Edited by E. A. Evans, Jr., Associate Professor of Biochemistry, The University of Chicago. Chicago: The University of Chicago Press, 1942. Cloth. Pp. 227. Price $3.

As the answer to the riddle of nutrition becomes clearer, more complete, the role of the vitamins as the common denominator of the whole problem becomes more firmly established. In the book under review, Professor C. A. Elvehjem traces the studies on the biological action of vitamins leading up to the recognition of the relationship between the vitamins and respiratory enzymes, and outlines recent developments. He points out that a direct relationship with enzymatic function has been established for thiamin, riboflavin, and nicotinic acid and suggests that additional and similar relationships will be established in the future.

Even though we do not yet know how the enzymatic changes are related to the symptoms observed, in one instance (thiamin) the mechanism is fairly clear. A large number of enzymes appear to contain riboflavin, hence a possible reason for the variety of symptoms observed as a result of riboflavin deficiency. Dr. Elvehjem adds that (in the case of nicotinic acid) more exact studies of the relation of the phenomena of a definitely reduced level of coenzymes in striated muscle and liver and changes in the oxidative metabolism of liver, muscle and kidney, to the onset of blacktongue in dogs or pellagra in humans, may "help explain the larger problem of the relationship of nutrition to infectious diseases."

Again, we know that vitamins stimulate the growth of certain micro-organisms in the digestive tract which in turn can synthesize additional vitamins. Sometimes a balance, "or even an antagonism between various nutrilites," is repeatedly observed, pointing the way to further studies of the fundamental mechanisms.

The foregoing, which gives the gist of the first chapter, and each of the thirteen remaining chapters represent papers read at a symposium in connection with the fiftieth anniversary celebration of the University of Chicago. The subjects cover the various factors of the B complex; vitamin K, including its clinical aspects; and the economy of phosphorus in the animal organisms. Among the authors are Drs. Norman Jolliffe, Paul György, W. H. Sebrell, S. Lepkovsky, Roger J. Williams, and Vincent du Vigneaud.

Now

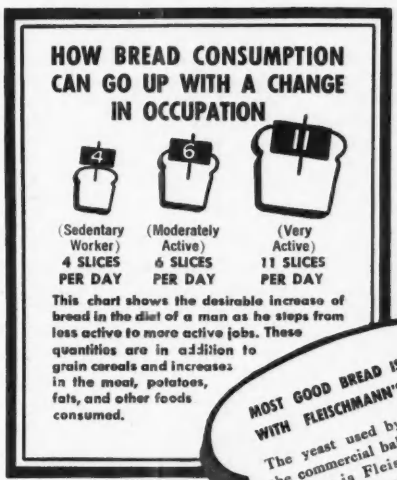
THE WHOLE NATION "MARCHES ON ITS STOMACH"

IN all-out war it's not only the Army that must be kept better fed. It's everyone.

Think of your own associates. There's the office worker who has changed his desk for a plant workbench. There's the secretary who now rivets bomber wings. There's a mother working extra hours in the kitchen —and a dad walking to work and tramping a warden's beat.

There's really no one who isn't working harder and consuming more vital energy that good food must replace.

And the nation looks to its home economics specialists for guidance in selecting the staple, nourishing, energy-building foods for its wartime diet.

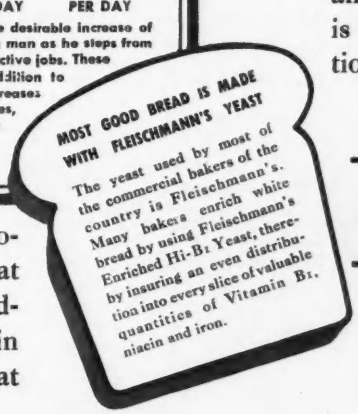

HOW BREAD CONSUMPTION CAN GO UP WITH A CHANGE IN OCCUPATION
4
6
11
(Sedentary Worker) 4 SLICES PER DAY
(Moderately Active) 6 SLICES PER DAY
(Very Active) 11 SLICES PER DAY
This chart shows the desirable increase of bread in the diet of a man as he steps from less active to more active jobs. These quantities are in addition to grain cereals and increases in the meat, potatoes, fats, and other foods consumed.

Nutritionists and the medical profession have always recognized that bread is our finest source of food-energy—that it is the basic food in a high-energy diet—the food that should have a place in every well-planned meal.

And bread lends itself to so many appetite-whetting uses. Undoubtedly you yourself have originated new forms of dressings, puddings, garnishes or other bread treats.

As you know, most people prefer white bread. And now this may be obtained with extra nutritive qualities. Most bakers supply white bread enriched with Vitamin B_1, niacin and iron. It is one of the important recommendations in the government's nutrition campaign.

So with our entire nation "marching on its stomach," good nutrition is vital. And more than ever, bread deserves its high place among energy-foods. Bread is basic in the diet of a nation working to win.


MOST GOOD BREAD IS MADE WITH FLEISCHMANN'S YEAST
The yeast used by most of the commercial bakers of the country is Fleischmann's. Many bakers enrich white bread by using Fleischmann's Enriched Hi-B_1 Yeast, thereby insuring an even distribution into every slice of valuable quantities of Vitamin B_1, niacin and iron.

Bread *is basic*

Foods and Nutrition. By Fern Silver. New York: D. Appleton-Century Company, Inc., 1941. Cloth. Illustrated. Pp. 522. Price $1.84.

Intended as a text for foods and nutrition classes in senior high schools, this book seeks to build on the "foundation . . . laid down in the earlier grades" and to "build upon that foundation with material that challenges the higher level of interest, intelligence, and ability of senior high school students. . . . The development of the study of foods and the foods-laboratory work is built around meal planning as nearly as is practicable in a high-school situation, rather than around the cooking of individual foods. When lessons are presented on the preparation of individual foods, the foods so presented are type foods."

In most of the lessons the preparation of a single meal is used as a means of teaching. For various reasons, stated by the authors, it was decided not to include a "cook-book" section in the book, although recipes are scattered throughout the text matter where needed to illustrate the lessons. The unit system of organization is used, and two main divisions of the book are "Foods in Relation to Health and Well-Being" and "Planning, Preparing, and Serving the Day's Meals." The first part covers food composition and food utilization by the body; minerals; vitamins; adequate diets; and a true-false test on nutrition principles. The second part of the book, as stated above, covers planning, preparing, and serving the day's meals, and includes chapters on food preservation and consumer buying. An unusual feature of a chapter in the section "Foods and Fun" is an explanation of how food is served in railroad dining cars and in hotels and restaurants, illustrated by actual bills of fare, together with suggestions for food selection.

The book seems to be complete and well suited to the age group for which it was written. Questions, activities, and summaries are included as aids to the busy teacher, although it is probable that the instructor would wish to give her own interpretation and emphasis to certain parts of the book.

Let's Study Foods. By Florence La Ganke Harris and Ruth Adele Henderson. Boston: Little, Brown and Company, 1941. Cloth. Illustrated. Pp. 371. Price, $1.68.

This is a textbook planned for use with boys and girls, presumably in the seventh, eighth, or ninth grade. The purpose, approach and general tone of the book are best described by these excerpts from the preface: "A building up of national background, an appreciation of family solidarity, and a realization of the immense part that food plays in our national economy have motivated much of the authors' choice of subject material. . . . The material is planned for both boys and girls as is obvious when the text is read. Consideration has been given to their interests and activities. This is true, especially, in the pupil experiences. . . . To broaden their appreciation of literature and to show them that the mention of food runs like a scarlet thread through much that has been written, the pupil references lead them far afield in the books on the shelves, at home, or in the library. . . . To show them how much is involved in the food they eat, a generous amount of space has been allotted to the discussion of the production, manufacture, and marketing of food. Lastly, the authors themselves have a real enjoyment of food. They have attempted to convey this same pleasure to the students so that anything connected with food will be fun."

The book is organized into twelve units. For each subdivision of the units there are accompanying "pupil experiences"—carefully worked-out activities in which the student can immediately apply what he has learned. The chapters on entertaining and manners are practical and appropriate—there is nothing feminine about the directions to boys for entertaining, for example, and instructions for setting the table and table manners for both boys and girls are properly and tactfully stated. The recipes are excellent, arrangement of steps being especially good for inexperienced cooks. Also, the illustrations of dishes to be prepared are inspirational and the chapters on equipment and safety in the kitchen are complete and up to date.

From this reviewer's point of view, if there be any weakness in this very appealing and low-priced text, it lies in the discussion on nutritional requirements. Here, as in many books for a similar purpose, there tends to be insufficient emphasis on the protein and fat needs of the body and too much stress and perhaps too much detail on the vitamins. Which brings up the familiar and difficult problem of trying to make a discussion of nutrition simple, foolproof, and, at the same time, complete. Perhaps if all books of this kind could be read in advance of publication by an authority in nutrition any flaws or misleading emphases here and there could be eliminated or corrected.

Heredity, Food, and Environment in the Nutrition of Infants and Children. By George Dow Scott, M.D. Boston: Chapman and Grimes, Inc., 1942. Cloth. Pp. 778. Price $5.

This is an amazing book, touching on almost everything —from diet to dreams, heredity *vs.* environment, to "music in the emotional and intellectual life," the whole interspersed with "a food journey" around the world with accompanying recipes, discussions of medicine as influenced by demonology, the Mosaic Law and "Grecian intelligence," and including a dissertation on how *not* to dump your refuse. Space does not permit the reader of this review more than a taste of the contents which the author hopes will "clarify the origin of hereditary and somatic disease, and in general . . . enumerate the foods and methods used in preventing and curing them"—a large order, in this reviewer's opinion. The discussion on heredity and environment appears to be adequate, and the author's opinions here and elsewhere throughout the book can be read with interest, but on the whole it cannot be recommended as a standard reference, especially with regard to the sections specifically concerned with the discussion of nutrition.

HERE ARE THREE CLEANSERS THAT WILL MAKE A DIFFERENCE IN YOUR DISHWASHING

WYANDOTTE KEEGO

H. D. C.

NEOSUDS

Whether you wash dishes by hand or machine, your problem is the same—how to get the *most* dishes washed in the *best* way, using the *least* time and the *least* money. And with a Wyandotte Dishwashing Compound on the job, you're pretty sure to find the answer.

For dishwashing by hand—Wyandotte H.D.C. makes a quick, lasting suds, does not harm the hands, and leaves dishes, silverware and glassware spotless.

For dishwashing by machine, Wyandotte Keego maintains its strength in solution—does its work quickly and thoroughly. Keego rinses freely, and a little goes a long way to lower your dishwashing costs.

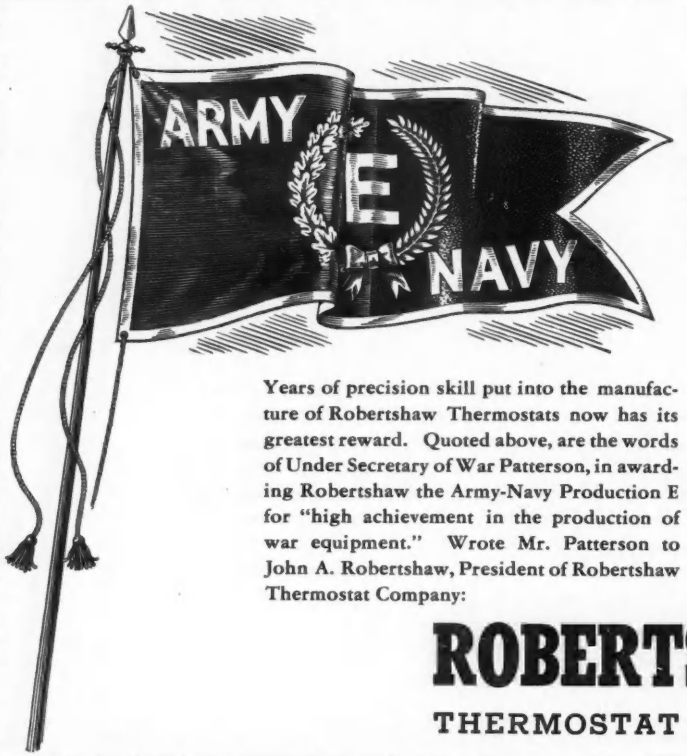
For glasses and silverware, Wyandotte has developed a new *soapless* way to make instant, foamy suds — Wyandotte Neosuds. This economical cleanser will do brilliant work under *any* water conditions. It ignores hard water, and will make oceans of suds, even in sea water. No toweling necessary. Glasses washed with Neosuds are free from film, spots and smudges when drained dry. It is the newest and quickest way to wash glasses and silver.

There are other Wyandotte products for dishwashing in different water conditions. Each one has been specially built to meet a definite kind and degree of hardness. Your Wyandotte representative will be glad to demonstrate. Call him today.

Wyandotte PRODUCTS

SERVICE REPRESENTATIVES IN 88 CITIES

THE J. B. FORD SALES CO., WYANDOTTE, MICHIGAN



"Proud of the Achievement of the Men and Women of the Robertshaw Thermostat Company"

Robert P. Patterson
Under Sec'y of War

Years of precision skill put into the manufacture of Robertshaw Thermostats now has its greatest reward. Quoted above, are the words of Under Secretary of War Patterson, in awarding Robertshaw the Army-Navy Production E for "high achievement in the production of war equipment." Wrote Mr. Patterson to John A. Robertshaw, President of Robertshaw Thermostat Company:

"The patriotism which you and your employees have shown by your remarkable production record is helping our country along the road to victory. The Army and Navy are proud of the achievement of the men and women of the Robertshaw Thermostat Company. May I extend to the Robertshaw Thermostat Company congragulations for accomplishing more than seemed reasonable or possible a year ago."

Men and women of Robertshaw who made this possible . . . your company salutes you!

ROBERTSHAW
THERMOSTAT COMPANY

the Army travels on its stomach

● Modern knowledge of nutritional *essentials* helps to keep men fit for their strenuous assignments in modern warfare. The army still "travels on its stomach".

Good food is essential on the home front, too. Take a tip from the fact that army garrison bread contains 6 per cent defatted milk solids, field ration biscuits 8 per cent, and it is an outstanding ingredient in emergency rations.

You can improve institutional diets, economically and conveniently, by using dry milk solids. Ask for Bulletin 504.

AMERICAN DRY MILK INSTITUTE, Inc., 221 N. La Salle St., Chicago

With doctors and nurses joining the armed forces daily, you, who are assisting the war effort at home by maintaining civilian health, have a greatly increased task.

To help in some measure decrease your heavy task, we are calling to the attention of the general public the fact that fruits and fruit juices should be a part of the well-balanced daily diet.

Since pineapple juice, grapefruit juice, orange juice, and tomato juice are all good sources of vitamins B_1 and C, we are suggesting in our advertising that use of these juices be rotated.

Such alternate use is advised for two reasons. First, because of the nutritional benefits, and second, because Government requirements of some fruit juices have decreased the quantities available for civilian consumption. From the pack of the calendar year 1942, the Government requires about one out of every three cans of Dole Hawaiian Pineapple and about one out of every four cans of Dole Hawaiian Pineapple Juice.

We are cooperating with the National Nutrition Program by featuring in our advertising the combination of pineapple with dairy products, vegetables, other fruits, meats, and seafood.

All of this advertising carries the Seal of Approval of the Council on Foods of the American Medical Association.

DOLE Hawaiian Pineapple Products

FROM HAWAII, U. S. A.

Current Literature

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 64, August 1942

* Nutritional anemia in an infant responding to purified liver extract. P. J. Fouts and E. Garber.—p. 270.

Nutritional Anemia. A macrocytic, hyperchromic anemia (other than pernicious anemia) can develop when the extrinsic factor of Castle is absent from the diet or the antianemic factor is not absorbed from the gastro-intestinal tract. In this case, a deficient diet was taken by the mother during pregnancy. The infant showed loss of weight, anemia and decreased intake of food after an infection. There was no improvement following the administration of iron and vitamins. The response to highly purified liver extract was satisfactory. The reticulocyte count was 26.8% maximal, and the gain in red blood cells and weight was rapid.

AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 204, July 1942

* A diet calculator for simplifying diet prescription in diabetes mellitus. T. G. Randolph.—p. 111.

Diet Calculator. Advances in the science of nutrition have not been fully applied in the treatment of disease; use of a few stock diets instead of individual attention is common procedure. In an attempt to simplify the problem a circular chart called a "Diet Calculator" has been devised. By manipulating the movable parts the desired therapeutic diet may be selected in terms of protein, fat and carbohydrate as well as in terms of actual amounts of foods.

ANNALS OF INTERNAL MEDICINE

Vol. 17, July 1942

* Chronic ulcerative colitis—allergy in its etiology. A. H. Rowe.—p. 83.

Colitis an Allergy. The possibility that chronic ulcerative colitis is the most severe result of allergy should be considered. Allergic colitis, caused by foods, results in diarrhea, mucous, bleeding, tenesmus, pain and cramping. Chronic ulcerative colitis may be caused by allergic reactivity in the colonic mucosa similar to that responsible for atopic dermatitis. Fruit-free elimination diets are recommended. With such diets, the maintenance of weight, or evidence of avitaminosis, hypoproteinemia, and anemia must be carefully watched. The use of sulfanilamide drugs may benefit associated secondary infection.

Contributed by Colleen Cox Hambleton, Food Utilization Division, Bureau of Home Economics, U. S. Department of Agriculture, Beltsville, Maryland; Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educational and Industrial Union, 264 Boylston Street, Boston; and the JOURNAL staff.

ARCHIVES OF INTERNAL MEDICINE

Vol. 70, August 1942

* Unusually high insulin requirements in diabetes mellitus. W. I. Glass.—p. 221.

High Insulin Requirement. The amount of insulin needed to control the defective carbohydrate metabolism of diabetes mellitus may vary. A case is reported in which the amount of insulin required was large. The usual methods to reduce insulin requirement; namely, changes in diet, changes in insulin, low-potassium diet and roentgen therapy were of no avail. More than 85,000 units of insulin were given in 5½ months. During ketosis, over 2000 units were given in a 24-hour period. This excessive need subsided after 6 months and the patient remained a mild diabetic.

BRITISH MEDICAL JOURNAL

Vol. 4254, July 18, 1942

* Biological value of breads.—p. 76.

Biological Value of Bread. The biological value of bread comprises its content of protein, carbohydrate, vitamins and salt. Feeding experiments show that replacing white bread with wheatmeal bread would raise the intake of nicotinic acid from 8 to 10 mg., to 12.3 mg. Evidence is accumulating in behalf of the superiority of wheatmeal bread.

FOOD RESEARCH

Vol. 7, July–August 1942

* A comparison of four methods for determining vitamin C with a 25-day, weight-response bioassay. C. F. Dunker, C. R. Fellers and W. B. Esselen, Jr.—p. 260.
* Loss of vitamin C during cooking of summer squash. R. N. Woodruff and F. I. Scoular.—p. 267.
* Protection of ascorbic acid during its extraction from plant tissues. M. E. Reid.—p. 288.
* Effect of various cooking methods upon subjective qualities and nutritive values of vegetables. E. V. S. Brinkman, E. G. Halliday, W. F. Hinman and R. J. Hamner.—p. 300.
* Vitamin B complex content of beer, ales, and malt tonics. S. Laufer, R. Schwarz and L. Laufer.—p. 306.
* Trace elements in food. H. O. Calvery.—p. 313.
* Determination of vitamin C and its sampling variation in strawberries. L. Burkhart and R. A. Lineberry.—p. 332.

Vitamin C Bioassays. A 25-day, weight-response, bioassay method for determining vitamin C is described and compared with two other bioassay methods and two chemical methods in determining the vitamin C content of canned tomato juice, canned grapefruit juice, fresh spinach, and fresh sweet corn. Of the different methods compared in this investigation, the 2,6-dichlorophenol-indophenol titration method and the 25-day, weight-response, bioassay method gave good checks with the standard Sherman bioassay method. The weight-response, bioassay method provides a simple and accurate method of checking the results of

The Importance of Thiamine in Infant Feeding

Several investigators[1] in the field of pediatrics have pointed out that thiamine (vitamin B_1) avitaminosis or partial deficiency is not uncommon in infants. While this is true for infants in general, it is more apt to be found in breast-fed infants. This is because the thiamine content of mother's milk depends partly on the time post partum and partly on the diet of the mother.[2]

For these reasons it is important to insure an adequate intake of thiamine by the mother. Also when selecting a supplement to breast milk or when adding cereals to the diet of the infant, it is of importance to use as supplements or additions foods with adequate thiamine content.

When selecting a cereal for use in your practice of pediatrics, consider the merits of PILLSBURY'S ENRICHED FARINA. In addition to its normal content of nutrients, Pillsbury's Enriched Farina contains per pound of dry cereal:-

1.66 milligrams of thiamine (vitamin B_1)

6.0 milligrams of niacin (nicotinic acid)

6.0 milligrams of iron

PILLSBURY'S ENRICHED FARINA is a bland, easily digested cereal that is low in crude fiber.

[1] "Significance of Vitamin B_1 (Thiamine) For Infants," W. B. J. Gerrits. Maandschrift v. Kindergeneesk 10:31, 1940 "The Symptoms of Partial Vitamin B_1 Deficiency in Breast Fed Infants," F. W. Clements. Medical Journal of Australia 29:19, 1942.

[2] "Thiamine Content of Various Milks," Norman Kendall. Journal of Pediatrics 20:65, 1942.

Pillsbury's *Enriched* Farina

chemical determinations for vitamin C in food products and should be of particular aid in evaluating the antiscorbutic properties of a food product containing added inactive or possibly naturally occurring forms of ascorbic acid or an anti-oxidant. In such cases the available chemical methods give the total ascorbic acid contents but do not differentiate between biologically active and inactive forms of vitamin C.

Vitamin C in Summer Squash. Summer squash (White Bush and Yellow Crookneck) loses less vitamin C with increased boiling time when the samples are garden fresh. A 10-minute boiling period and "a minimum amount of salted or unsalted water" destroys the least vitamin C, namely, 40%; parboiling and then sautéing was most destructive—about 72 to 77% of the vitamin being lost. One-half cup of either of the foregoing varieties cooked for 10 minutes in boiling water will furnish one-fourth to one-third the adult daily vitamin C requirement.

Ascorbic Acid. Immature soy beans and cowpeas have a vitamin C content comparable to that of fresh garden peas. Two of the vegetable types of soy beans, Rokusum and Nanda, at the edible stage yielded values of 32 to 34 mg. per 100 gm. The vitamin C is well preserved in cooking if the beans are heated very rapidly.

Effect of Various Cooking Methods Upon Vegetables. In general it may be concluded that so far as subjective qualities are concerned, the small pressure saucepan is as satisfactory as the open kettle for the cooking of all green vegetables except asparagus, as well as for the cooking of carrots and white turnips. However, the pressure saucepan seems less desirable for other brassicaceous vegetables; namely, cabbage, broccoli, and cauliflower. On the other hand, the waterless cookers produce a completely satisfactory product only with carrots and green beans cut in narrow strips. From the standpoint of nutritive values, no one of the cooking methods shows definite superiority over another so far as calcium is concerned, when the cooking water contains calcium, nor is the loss great in any case. With phosphorus and vitamin C, on the other hand, the variation in retention is greater, on the whole; and the pressure saucepan has, on the average, a slight advantage over the other methods.

Vitamin B Complex Content of Beers, Ales, and Malt Tonics. Owing to the fact that tests of malt beverages were usually confined to a determination of vitamin B_1, the belief has prevailed that these products are devoid of vitamins. In the present tests three different brands of beers, ales, and malt tonics were assayed by microbiological methods for thiamin, riboflavin, nicotinic acid, and pantothenic acid. With the exception of malt tonics, the low thiamin content of fermented malt beverages was confirmed. This probably is due to absorption of thiamin by the yeast in the course of fermentation. However, contrary to former beliefs, the remaining vitamins of the B complex, for which assays were made, were found in appreciable quantities in fermented malt beverages. The following average values were found for beer, ale, and malt tonics, respectively: riboflavin, 27, 33.5, and 48.4 micrograms per 100 ml.; nicotinic acid, .817, .817, and 1.49 mg. per 100 ml.; pantothenic acid, 102, 94 and 121 micrograms per 100 ml.

Trace Elements. Although physiological significance has been ascribed to arsenic, aluminum, barium, bromine, fluorine, nickel, rubidium, and silicon, entirely satisfactory demonstration of their essential nature for higher animals has not yet been accomplished except possibly in the case of fluorine.

Vitamin C in Strawberries. The ascorbic acid content of sun-ripened strawberries was greater than that of berries ripened in the shade. In Klondike strawberries grown in different fields the ascorbic acid content varied from 36 to 52 mg. per 100 gm. fruit. Varieties grown in the same field at the same fertility level ranged from 66 to 32 mg. ascorbic acid per 100 gm. fruit. On the basis of a hundred Klondike strawberries, the ascorbic acid content increased from 59 mg. in green berries to 280 mg. in ripe berries.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 120, September 5, 1942

* Arterial hypertension: Chairman's address. R. W. Scott.—p. 1.
* What causes flatulence? W. C. Alvarez.—p. 21.
* Handbook of nutrition. VI. Principal mineral elements in nutrition I. G. Macy.—p. 34.

Vol. 120, September 12, 1942

* Nutritional aspects of feeding an army. P. E. Howe.—p. 93.
Nutritional aspects of feeding in the United States Navy. E. W. Brown.—p. 96.
* The biologic value of wheat proteins. Editorial.—p. 126.
* Extraordinary case of obesity. Current comment.—p. 128.

Vol. 120, September 19, 1942

* The so-called mucous colitis or spastic irritable colon. C. W. McGavran.—p. 182.
* The juvenile diabetic patient surviving twenty years. H. E. Eisele.—p. 188.
* Ocular changes in young diabetic patients. C. S. O'Brien and J. H. Allen.—p. 190.
* Arteriosclerosis with diabetes mellitus: A study of the pathologic findings in 193 diabetic and 2250 nondiabetic patients. J. R. Lisa, M. Magiday, I. Galloway and J. F. Hart.—p. 192.
* Chemistry in relation to the food industry. Editorial.—p. 207.
* Citric acid in bone. Current comment.—p. 208.

Vol. 120, September 26, 1942

* Digestive disease and military service. J. L. Kantor.—p. 254.

Arterial Hypertension. In the light of both experimental and clinical observations, the correlation between arteriosclerosis, kidney disease and hypertension, which has puzzled physicians since Bright, may now be stated as follows: Arteriosclerosis is the primary disease. This process, when affecting the vascular system of the kidneys, excites a humoral mechanism which produces a widespread vasoconstriction and thus causes hypertension. Whether this is the benign or malignant type depends on the progress and severity of the vascular lesions in the kidneys. Essential hypertension is a manifestation of renal vascular disease, and therefore it appears as one aspect of human arteriosclerosis, the nature of which is one of the greatest unsolved problems in medicine today.

Flatulence. The swallowing of air by persons who fail to close their lips over the edge of a glass when drinking or who perhaps chew with their mouths open, is a common cause of flatulence. Others suffer from bloating, perhaps due to nervousness or to physical causes such as drinking ice cold fluids on an empty stomach or as a result of constipation, and following the eating of certain foods. In this connection the author states that "foods most commonly blamed for flatulence, in the order of their frequency, are cooked cabbage, raw apples, radishes, dried beans, cucumbers, milk, fatty or rich foods, melons, cauliflower, chocolate, coffee, lettuce, peanuts, eggs, oranges, tomatoes, and strawberries." Gases are also produced in the intestine following the use of foods known to be allergic to certain individuals. Milk and eggs, even for the non-allergic, are said to be gas producers. Other causes include overeating, anxiety or pain, cholecystitis, diarrhea, a sensitive colon, hemorrhoids, mild intestinal obstruction, a failing heart, mild cyclic insanity and intestinal parasites. The author suggests as treatment that an effort be made to determine which are the chiefly incriminating foods and to eliminate roughage, raw foods, notoriously gas-forming foods, and laxatives, also to reduce the amount of food eaten.

Mineral Elements in Nutrition. Mineral elements are

QUESTION: *In these patterns of diet planning for good nutrition, at least 21 servings of fruits and vegetables, in addition to 11 servings of potatoes or sweet potatoes, per week are recommended (1). How can I manage this on only a moderate food budget?*

ANSWER: You will note that these methods of diet planning have provisions which assist in modifying your food purchases according to fluctuations in individual food costs with season and location. Also, the fruits and vegetables prepared for service from the fresh or canned products make similar nutritive contributions and may be used interchangeably. In diet planning, full consideration should be given to the many canned fruits and vegetables which are readily available at reasonable cost during all seasons in all sections of the country.

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(1) 1939, Food and Life: Yearbook of Agriculture U. S. Dept. Agriculture, U. S. Gov't Printing Office, Washington, D. C.

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discussed from the standpoint of the mineral composition of the body, the metabolic balance, the mineral metabolic balance, including specific discussions of calcium, phosphorus, sulfur, sodium and chlorine, positive and negative mineral balances and, finally, excess minerals. The calculation of the difference between intake and outgo in the urine and feces, although in some cases it may be of an approximate nature, gives significant information on the metabolism of the individual elements and groups of minerals during the various stages of growth and physiologic function, and renders valuable service in the diagnosis and treatment of certain types of diseases.

Feeding an Army. Comment concerning this and the paper following, the title of which is listed above, appears under the "Nutrition and the War" section of this JOURNAL.

Wheat Proteins. Much has been said about the vitamin content of wheat but relatively little of its protein content. "Yet protein is just as necessary for life as vitamins perhaps and even more so because more of it is required to maintain health and efficiency." A thorough and conclusive study of the biologic value of the proteins contained in wheat flours, by Harriette Chick, Division of Nutrition of the Lister Institute, shows much less variation and the results are much more conclusive than those of previous studies. The three flours represented varying degrees of extraction of the whole meal. One contained all of the grain and therefore was called 100%; the second, designated as "National Wheatmeal," 85% of the wheat grain; and the third, that used for making ordinary white bread, represented about 75% of the whole grain. The growth of all rats on the whole meal was distinctly and emphatically greater than on the "National Wheatmeal" and even more so than on white flour. In three separate experiments this advantage ranged from 50 to 60%. If the results were calculated on the basis of their relative biologic value which represents the relationship between the weight increase and the protein eaten, the results are also striking; *i.e.* the whole meal, 1.60 to 1.71, the white flour, 1.33 to 1.46, and "National Wheatmeal" falling between these two values. The coefficient of digestibility of the whole meal protein was from 5 to 6% less than that of the white flour. However, if this factor was taken into account in calculating the biologic value of the whole meal, its superiority in protein content becomes even more apparent. In other words, the biologic value of the digested part of this flour rises to a figure of 1.98 to 2.13 in contrast to white flour, which increased but slightly.

The reason for the superiority of whole meal is apparent from the well-known facts concerning the protein content of the various portions of the wheat grain. Although the endosperm or white part of the wheat comprises 83% of the grain, its protein content (gluten) is but 11%, whereas the bran, which constitutes 15% of the grain, contains 18% protein, and the germ, though but 1.5% of the grain, contains 40% protein. The gluten of white flour is known as a poor protein undoubtedly because of its inadequate content of certain essential amino-acids which act as limiting factors in its utilization. The point to be emphasized is that the proteins of the germ are composed of amino-acids which are able to supplement those of the gluten and thus raise the biologic value of the mixture out of proportion to the amount added. The same is true of the proteins of the bran, although it is probable that much of its protein may be unavailable for human digestion.

If we are to utilize as efficiently as possible the protein contained in wheat grain, it would seem most advisable to retain as much as possible of the protein constituents. In this sense, therefore, any milling which leads to a loss of some of the important proteins of wheat is distinctly to be deplored. "Perhaps by education the popular habits may become so adjusted as to take advantage of the superior value of the whole grain over any flour that is made by extracting and removing part of the essential protein, not to mention its vitamin content."

Obesity. A recent survey of the literature indicated only 16 instances of persons weighing 700 pounds or more. Of these, 10 were men and 6 were women. The heaviest man weighed more than 1000 pounds and the heaviest woman, 850 pounds. The case of a woman weighing more than 700 pounds is reported principally to present a formula of what might be called an index of "relative obesity" whereby fatness may be rated. In other words, the height must be considered as well as the weight so that the classificatory index relates the width of the body to the height. The subject reported, a 35-year-old woman weighing about 800 pounds, is the fattest human being known at present, the observations having been based on a weight of 772 pounds and a stature of 5 feet 5½ inches. This ratio of weight to height presents girth measurements which in general are 2.41 as great as those of a woman of medium build of the same height, and in none of the 16 other subjects of known height is the index of relative obesity higher than 2.22. The factors which combined to produce this person's unique bulkiness of figure included heredity, exceptionally large appetite and likewise a constitutional metabolism that was abnormally efficient in producing and storing fat.

Mucous Colitis. An adequate diet is important in treatment of mucous colitis. With the more severe case it is necessary to start with a smooth, bland diet, eliminating coarse foods with seeds or skins, raw fruits and vegetables, and fried foods. The patient may then be permitted to take anything he can tolerate. There is "usually a multiple [vitamin] deficiency and a multiple vitamin capsule is indicated." Additional B complex in a concentrated form or as brewers' yeast and additional vitamin C are often necessary. For some of the extremely nervous, 50 mg. niacin three times a day is of benefit. Some persons are sensitive to various foods and when this sensitivity exists, only the elimination of that particular food from the diet will give relief. To determine the exact food to which the patient is sensitive often requires the services of an experienced allergist.

Juvenile Diabetics. In 73 juvenile patients who had developed diabetes before insulin became available, the most important complication was the early appearance of arteriosclerosis; 70% showing arteriosclerotic changes have either hypertension or albuminuria, or both, at an average age of 29 years. Impaired physical development in childhood occurred in 16%. Sex does not influence survival. The disease was hereditary in 62%. Mental maladjustments are somewhat greater in the juvenile diabetic than in the nondiabetic of this age. The educational achievement of those who make up this series is probably the most striking feature brought out in the study: 42% have attended college, as compared to 7% of the population of the continental United States who are 21 or more years of age. A woman's chance of having a healthy child after 20 years of diabetes with onset in childhood is becoming increasingly more favorable.

Ocular Changes in the Diabetic. Most interesting and striking is the incidence of retinopathy of the eyes in younger diabetic patients: 4% in a series of more than 500 cases. The retinal disorder must be attributed to the diabetes, since it has the same appearance as that occurring in older patients and it is seen in those in whom no other disease can be found. While we do not cure diabetes at present, the control of the disease is infinitely better and the patients live much longer; therefore the retinal changes have a chance to develop. As far as lens changes are concerned, this study only confirms the fact that diabetic cataract is comparatively common—in this study an inci-

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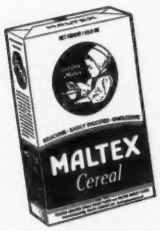

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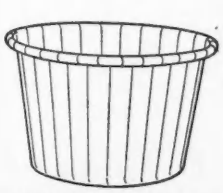

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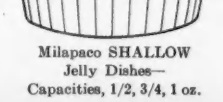

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dence of almost 14% in 260 patients under the age of 21 years.

Arteriosclerosis With Diabetes Mellitus. Arteriosclerosis is more common and more frequently severe in diabetic than in nondiabetic persons. Severe arteriosclerosis is more frequent among persons with diabetes at all ages. Sclerotic changes in both the diabetic and the nondiabetic person increase in frequency as age advances, but among persons with diabetes a given frequency of these changes is reached about 10 years earlier than among those without the disease. Occlusive accidents in the coronary arteries occur with greater frequency among diabetic than among nondiabetic patients at all ages, but the frequency of such accidents is not correlated with age. Arteriosclerosis of the kidneys compatible with chronic hypertension is more frequent among diabetic than among nondiabetic patients. Peripheral arteriolar sclerosis necessitating amputation is of equal severity in persons with and without diabetes. It has no close relationship to visceral arteriosclerosis, but the severe visceral changes are much more frequent in diabetic persons.

Chemistry and Food Industry. The 104th meeting of the American Chemical Society, Buffalo, September 7–11, emphasized once more the importance of chemistry in the food industries. Gardeners now routinely dip cuttings in a solution of indoleacetic acid to accelerate the development of root hairs and thus aid in the establishment of a new plant. Fruit trees are sprayed with chemicals such as thiourea or naphthalene acetic acid to reduce the loss of pears and apples resulting from premature dropping from the trees. "Presumably these act by some kind of humoral mechanism and cause the fruit to remain on the tree until ripe." Chemistry is also continually helping in man's battle against insects. Many kinds of seeds now are disinfected with organic compounds containing either mercury or copper, thus preventing loss through insects or fungus growth. Hydrocyanic acid gas "is much used to control the confused flour beetle." Pyrethrum is used in many contact sprays. Symposiums of this meeting included a discussion of methods for the preservation of foodstuffs and their application in the war effort. Papers were presented on the dehydration of meats, fruits and vegetables, on the latest developments of freezing foods and on the cold storage of foods by modern methods. Other papers dealt with the nutritional aspects of processed foods and with food requirements for overseas use.

Citric Acid in Bone. The presence of citric acid in the animal organism has been known since 1888, when it was first isolated from cow's milk. Some 40 years later citric acid was isolated from normal human urine, and this organic acid has since been shown to occur in relatively low concentrations in various tissues of the body. In an investigation of the citric acid content of tumor tissue, it was found that the hard substance of bone constitutes a heretofore unsuspected store of citric acid which may amount to some 70% of that contained in the whole body. The nature of the organic combination of bone cations has long been an almost uninvestigated field, and a systematic study of bone for the presence of other physiologically important organic acids would now appear indicated. It may be tentatively assumed that the citrate may be present in simple or complex combination with calcium, although the nature of the distribution of citric acid in bone, and its possible roles in structural and metabolic functions in this tissue, are important problems for future investigations.

Digestive Disease and Military Service. The incidence and characteristics of digestive disease in peace are compared with those in war and it is pointed out that an increase in digestive disorders may be expected over present figures "under the unfavorable conditions of war in foreign lands, and particularly so in the tropics." Not only typhoid but dysentery, sprue and food poisoning are important aspects of the problem. Kantor stresses the greater likelihood of digestive neuroses, functional disorders without evidence of organic diseases, during wartime. With regard to ulcer as a factor in military service a report of the Surgeon General's Office is quoted as follows: "In view of the fact that officers are generally able to look after their diet somewhat better than enlisted men, it is the policy of this office to accept for limited service applicants for commission who have histories of gastric or duodenal ulcer, provided such histories indicate freedom from activity during the preceding five years and provided further that gastro-intestinal x-ray at the time of examination is negative." It is pointed out that "prophylaxis against all the aforementioned diseases lies in attention to diet, mess hygiene and general sanitation." The writer outlines the care of a typical case in an Army hospital in which as he says, "all the usual therapeutic procedures are available. The hospital pharmacy carries all essential standard drugs. The dietetic department, consisting of a chief and seven assistant dietitians, supplies the usual therapeutic diets. The services of the surgical and dental staffs are available for consultation and treatment." In summary it is said that the most important of these diseases in the present conflict are the intestinal fluxes, peptic ulcer, digestive neuroses and possibly gastritis. Peptic ulcer ranks high as a cause of disability for military service. It is increasingly common in both the civilian and the military population and leads all other digestive diseases as a cause for discharge from the Regular Army.

JOURNAL OF NUTRITION

Vol. 24, August 1942

* The minimum vitamin A requirement of the fox. S. E. Smith.—p. 97.
* The influence of aluminum sulfate upon the absorption of dietary phosphorus by the rat. H. R. Street.—p. 111.

Thiamin clearance as an index of nutritional status. D. Melnick and H. Field, Jr.—p. 131.

* Vitamin B_1 (thiamine) requirement of man. D. Melnick.—p. 139.
* The nicotinic acid content of meat. W. J. Dann and P. Handler.—p. 153.
* Cataract and other ocular changes resulting from tryptophane deficiency. J. R. Trotter and P. L. Day.—p. 159.
* Nicotinic acid, pantothenic acid and pyridoxine in wheat and wheat products. L. J. Teply, F. M. Strong and C. A. Elvehjem.—p. 167.
* The relation of B-vitamins and dietary fat to the lipotrophic action of choline. R. W. Engel.—p. 175.
* Factors required by chicks maintained on a heated diet. H. A. Waisman, R. C. Mills and C. A. Elvehjem.—p. 187.

Vitamin A Requirement of Foxes. Experimental vitamin A deficiency in the fox is characterized by nervous disturbances, periods of whirling and in some cases coma, zerophthalmia, widespread epithelial metaplasia, demyelinization of many nerve fibers, and abortions. The minimum vitamin A requirement necessary to prevent the occurrence of the nervous symptoms in growing pups lies between 15 and 25 I.U. per kg. body weight per day. Storage of vitamin A did not occur in the liver until 50 to 100 I.U. vitamin A per kg. per day was fed.

Phosphorus Absorption. When aluminum sulfate was fed in amounts chemically equivalent to the phosphorus in the ration, essentially all of the phosphorus was rendered unavailable. When aluminum hydroxide was fed to young rats at levels of 0.5 and 1.0% of the diet, about one-third to one-fourth of the aluminum was converted to a form reacting with phosphorus.

Thiamin Requirement. The vitamin B_1 requirement of the adult has been estimated to be 350 mg. per 1000 calories. Only 73% of the so-called normal subjects excreted sufficient quantities of thiamin in the urine to pass all the thiamin clearance tests.

Nicotinic Acid Content of Meat. Nicotinic acid analyses

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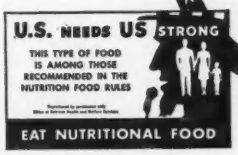

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of a number of meats purchased at retail stores are reported. From one-third to one-half of the nicotinic acid was lost in cooking several types of meat.

Tryptophane Deficiency. Young rats on a tryptophane-deficient diet developed cataractous changes in 8 to 82 days. The lenticular changes were prevented by supplementation of the diets with 0.1 or 0.2% tryptophane. A large proportion of the animals on diets deficient in both tryptophane and lysine or lacking in either of these amino-acids developed vascularity of the cornea. A few showed a generalized ophthalmia. Other changes associated with the tryptophane deficiency were loss of weight, hunchback, unkempt appearance, alopecia, greasy hair, and nervousness.

B Complex in Wheat. Patent flour, clear flours and wheat germ were assayed for nicotinic acid, pantothenic acid and pyridoxine. Patent flour, compared with whole wheat, was found to contain about one-sixth as much nicotinic acid, and approximately one-half as much pantothenic acid and pyridoxine.

B-Vitamins, Dietary Fat and Choline. Pyridoxine and a source of essential fatty acids are necessary in the diet for choline to function properly as a lipotropic agent. Inositol, in addition to choline, is necessary for the rat receiving purified diets supplemented with other B-vitamins known to be required by this species.

Deficiencies in Heated Diet. Growing chicks maintained on the heated diet require the eluate factor in yeast, cartilage, and biotin in addition to the 6 crystalline factors of the B group of vitamins. Factor U and biotin may be supplied by liver residue.

JOURNAL OF PEDIATRICS

Vol. 21, August 1942

* The nutritional care of children in wartime. J. D. Boyd.—p. 252.

Nutrition of Children in Wartime. Dietary supervision of children leads to improved health and vigor even in those who did not appear ill or malnourished. Food needs are best met through foods rather than pharmaceutical products. Enrichment of foodstuffs with protective factors offers a means of raising the present level of nutrition.

LANCET

Vol. 243, July 11, 1942

* Effect of war-time food on children.—p. 41.

Vol. 243, August 1, 1942

* Vitamin C from parsley.—p. 130.

Wartime Food. There is as yet little information on the effect of war upon child health. The chief tangible effects of the war have been a higher carbohydrate intake for civilians as a whole, a better diet for the poorest families, and a fairer distribution of foodstuffs through rationing. There has been a drop in the average hemoglobin levels of school-children. The diet of English children is probably better now than last winter as a result of better distribution of milk, more school meals and the system of priorities in eggs and oranges.

Vitamin C in Parsley. Watercress, usually considered the best source of vitamin C in salad vegetables, is far surpassed by parsley which is an easy and decorative crop to grow. Parsley contains an average of 280 mg. ascorbic acid per 100 gm. The optimal daily requirement for an adult would be about three-quarters of an ounce. It is best to eat the fresh leaves, either in salad or sandwiches. Chopping with a sharp, stainless-steel knife reduces the ascorbic acid content 20%.

PUBLIC HEALTH

Vol. 55, July 1942

* Effects of wartime nutrition on children. C. F. Brockington.—p. 175.

Wartime Nutrition. If children in England consumed their available rations, those up to 8 years would be as well off as before the war, while those over 8 would be less well off. Many children from the slums must have benefited greatly by improved feeding in new homes. A long-time policy of child nutrition includes a school lunch for every child, compulsory provision for whole meal bread and an Oslo breakfast. The short term policy should include the fortification of dried milk with vitamin D_3 and vitamin C. Jam might be fortified with vitamin C. Bread might be fortified with dried milk and dried yeast. A suitable organic salt of iron should be added to food, and vitamin concentrates used more widely in infant welfare work.

SCIENCE

Vol. 96, August 14, 1942

* Treatment of experimental renal hypertension with vitamin A. G. Wakerlin, W. H. Moss and E. L. Smith.—p. 161.
* Renal hyperlipemia in dogs. W. Heymann.—p. 163.

Vol. 96, August 28, 1942

* Powdered vegetables.—p. 10.

Vitamin A in Renal Hypertension. Striking reductions in blood pressure were obtained in each of 3 dogs treated with vitamin A. Two controls showed no significant changes in their hypertensive levels. During vitamin A therapy the serum vitamin A values of the 3 dogs varied from 500 to 3000 units per 100 cc. while that of the controls varied from 40 to 70 units.

Renal Hyperlipemia. The tubular apparatus of the kidneys of dogs possesses a regulatory influence on the blood lipids. Human kidney may exert the same function. A disturbance of this function would explain the hyperlipemia observed in nephrosis better than any hypothesis thus far advanced.

Powdered Vegetables. The small cans of strained vegetables for babies may be out for the duration. Dried, powdered vegetables can be safely used for infant feeding. From 8 to 10 lb. fresh vegetables may be reduced to one pound by dehydration, with consequent saving in shipping space. Even a 2-day-old infant can safely be given the powdered, dried vegetables when suitably diluted with water.

AMERICAN RESTAURANT MAGAZINE

Vol. 26, July 1942

* Front line restaurants. H. Salmon.—p. 22.

Check-list of food preparation methods to conserve maximum nutrition.—p. 26.

* The food and nutrition of industrial workers in wartime. A. M. Macfarlane.—p. 27.
* Effect of nutrition education shown in public reaction.—p. 28.

Food service bar answers help problem in this coffee shop. D. Penn.—p. 31.

Vol. 26, August 1942

Navy seeks to keep U. S. gobs best fed.—p. 25.

* How Mills restaurants are cooperating in the nutrition campaign. J. V. Malone.—p. 27.
* Do state compensation laws eliminate damage suits by injured employees against restaurant owners. L. T. Parker.—p. 30.
* Westinghouse war workers respond to victory lunch idea. H. L. Parke.—p. 32.

Restaurants. J. Lyons & Company which operates four Corner House restaurants and many tea shops in Britain

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The Federal Security Agency has called upon the Hospitals of America to take the leadership in the National Nutrition Program. Because of their importance to the National Security, hospitals receive special consideration and priority ratings, but, we all want to see that the Armed Forces get all the aircraft, ships, tanks, guns and ammunition they require. These are constructed of the same materials ordinarily used in fabricating kitchen equipment. It is up to you and ourselves, therefore, to keep your present equipment in operating condition just as long as possible.

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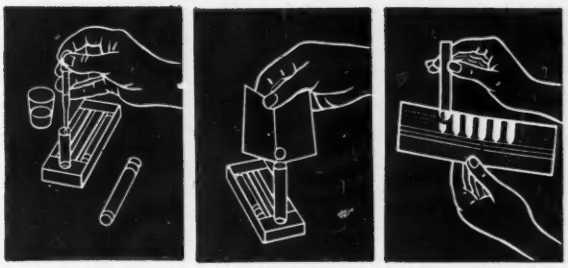

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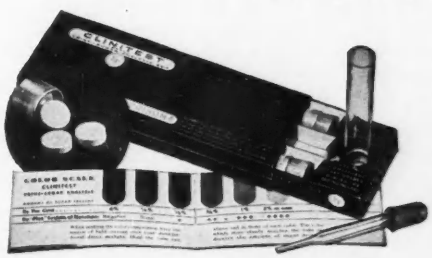

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ELKHART, INDIANA

has solved problems of blitz, food shortage, and labor. A food order limiting and defining the number and types of dishes that may be consumed at any one meal is interpreted by a system of asterisks, denoting whether one or two of certain types of food may be served at a meal. A policy of carrying on food service until danger was imminent made it necessary for volunteer workers to sleep in tea shops so that early morning service might be had regardless of traffic dislocation. Mobile tea shops in vans were established to carry on when permanent locations were damaged. Because of the wartime service demand for both men and women workers, many tea shops have been converted into cafeterias.

Industrial Workers. Industrial cafeteria managers are largely responsible for the fitness of workers who eat one or two meals at the plant. The company has an obligation to see that workers have good food and at least 30 minutes for meal time. Industrial cafeterias should be run on a non-profit, non-loss basis. Food posters should be displayed in prominent places in the plant to further the workers' knowledge and information. Cafeteria operators must keep up to date on nutrition developments and frequently check buying procedures to be sure they are getting greatest value for money spent. A well-balanced, popular "Victory Special" with an attractively low selling price should be offered at each meal. Between-meal feedings are an integral part of the workers' dietary and should consist of easily assimilated and easily served foods such as milk, fruit, and juices.

Nutrition Program. Statements from restaurant operators throughout the country indicate that patrons are doing a better job of selecting food combinations. Fears that confusion might result from the nutrition education program in restaurants have never materialized and average meal checks have suffered no adverse effects. Restaurants may further tie up with the nutrition program by the use of a 4-page folder, containing nutrition information and "personalized" restaurant items, available from *The American Restaurant Magazine* at $5 per thousand.

Restaurants Sell Nutrition. The Mills Service Corporation, operators of restaurants in the Middle West, has been actively promoting the National Nutrition Program. Table cards are attractively designed to give facts about vitamins. Patriotic menus have war bond and war stamp sales reminders on the cover and nutritional information on the back.

Compensation Laws. Workmen's state compensation laws enable restaurant employees to recover compensation from the state for any injury received while "in the course of the employment," irrespective of whether the injury resulted from negligence of the employee or the employer. However, there are still cases where the employer may have to pay damages to an injured employee. In order to determine whether the employee was "in the course of the employment" at the time of the injury, the court must find out whether the employee was at the time engaged in the performance of the duties required of him by his contract of employment; or by specific direction of his employer; or whether he was engaged at the time in the furtherance of the employer's interest. Under any of these conditions the employee may receive compensation. Breaking spells for meals or rest are not considered as breaking the continuity of the work, but any independent action of the employee that has nothing to do with the employer's interest and which involves injury is not compensatory. If an employee is called specially to work he can receive compensation for any accident while traveling to and from his home. If the employee is injured on the "working place" he is entitled to compensation, but the bounds of the "working place" must be clearly identified.

Victory Lunch for Workers. The Westinghouse Electric and Manufacturing Company now provides in their cafeteria a 30-cent victory lunch composed of meat, fish or eggs; vegetables; whole wheat or enriched bread; butter and milk, or a milk dessert. A booklet issued some months ago outlining the basic essentials of diet paved the way for this attempt to serve and sell wholly nutritious food in the cafeteria. Although the victory lunch has been served in the cafeteria only a few weeks, it is receiving excellent support. Employees are choosing more nutritious food—milk and fruit—from the snack wagons that roll through the departments twice for each shift, and eating 50% more green vegetables, 25% more salads, 10% more milk, and 50% more carrots and lettuce than they ate before the nutrition program was initiated.

FOOD INDUSTRIES

Vol. 14, July 1942

* Wartime food problems discussed by IFT.—p. 41.
* Why not convert the apple jack plants? B. T. Branham.—p. 44.
* Method developed for dehydrating meat.—p. 46.
* How dehydrated foods are being packaged.—p. 47.
* What packages to use for dehydrated foods. L. K. Harper.—p. 52.
* Precision instruments speed quality control. J. K. Cameron, K. G. Dykstra and J. E. Fix.—p. 60.
* How to prevent and remove milk deposits. L. Shere.—p. 63.
Brief summaries of AMS standards.—p. 66.
* Use of soya lecithin will save scarce fats. J. Stanley.—p. 69.
* Egg driers cautioned about quality control.—p. 77.
* Canned foods order amended by WPB.—p. 78.
* Government offers help to food dehydraters.—p. 82.
* Ceiling lifted on some foods.—p. 87.
* Railroad storage for quick frozen foods.—p. 109.
* Vitamin-enriched bread.—p. 110.
* New developments in flavor.—p. 110.
* Preserving eggs.—p. 112.

Vol. 14, August 1942

* New WPB regulation affects all food plants. W. B. Spooner, Jr.—p. 39.
* Preventing spoilage in wartime storage. E. Hardy.—p. 44.
* Brief summaries of AMS standards.—p. 46.
* Quick freezing offers wartime economies. F. App.—p. 48.
* Dehydration methods used in California. E. M. Mrak.—p. 50.
* How to maintain electric motors. O. F. Vea.—p. 56.
* Metal-saving bag.—p. 69.
* Sweet potato candy.—p. 69.
* Seasoned salt.—p. 69.
* Shatterproofing for window glass.—p. 94.
* Synthetic hard rubber.—p. 94.
* Spice contamination.—p. 105.
* New juice extractor.—p. 105.
* Suspension agent for chocolate.—p. 105.
* Salting gathered cream.—p. 106.
* Palatability of chicken.—p. 106.
* Paper milk containers.—p. 107.
* Ice cream freezer.—p. 107.
* Formulas for foods.—p. 111.

Food Technology. Metal scarcity, shortage of tin and metals for machinery, and the curtailment of transportation due to rubber shortages, tax the technologist to evolve methods of food preservation other than canning, and to invent substitutes for previously imported foods. Preservation of the nutritive value of food is the chief consideration today. Heat, oxygen, light, enzymes, pH, time and moisture cause vitamin loss during dehydration. Rapid handling (dehydrators close to crop areas) is the greatest safeguard. Best products are those dried to between 3 to 4% moisture. Flavor and quality of dehydrated foods are greatly diminished after 16 weeks' storage due to enzyme activity which tends to darken, toughen, and develop undesirable flavor and odor in the products. Cellophane packaging is satisfactory and aids greatly in keeping within the 17,000 tons of tin allowed per year for cans. It decreases shipping weight 75% in some cases and appears to prolong the shelf life of foods.

ANSWERING *your questions about the canned foods situation*

BECAUSE we at Libby's pack a greater variety of foods under one label than any other company, we are in a particularly favorable position to answer your questions about canned foods. We are glad to do so, and hope you will pass the information on to your students and Red Cross and Nutrition classes. However, conditions are constantly changing; no one can give hard-and-fast answers. So what we tell you here is strictly "as of November, 1942."

Certain foods out

The common, basic foods such as fruits, vegetables, juices, meats, evaporated milk, are still being canned. Part of the 1942 pack has already reached the stores, more will follow. However, many items, readily available in other forms, will no longer be packed in tin. Foods such as gravy, spaghetti, hash, breads, puddings, will not be packed in tin cans for the duration.

Most small cans eliminated

To save strategic war materials (tin and steel) there will be a general conversion to large sized cans. Generally speaking, vegetables and fruits will be packed in No. 2 and No. 2½ sizes; fruit and vegetable juices in No. 2 and 47 oz. sizes; salmon, evaporated milk, and meats in their regular odd sized cans. As your know, more and more foods are being packed in glass instead of tin.

Shortages inevitable

You are probably already finding that grocers are frequently out of some particular canned food you want—even though it's an ordinary item such as salmon, pineapple, tomato juice. An understanding of the problems we canners are facing explains this situation.

Millions of cases to Uncle Sam

A high percentage of the foods canned in this country is going to our armed forces and our allies. For example, Uncle Sam is getting 34% of Libby's 1942 pineapple pack, 40% of our fruit cocktail, a large share of our meats, 17% of our tomato juice, practically all of our 1942 salmon catch.

Not enough tin, too few workers

Before the war, 86% of America's tin came from the Far East. You can imagine the problem since that supply stopped. Then there is the shortage of labor. As more and more workers go to the services and war industries, it becomes increasingly difficult to harvest and pack our foods. Transportation, of course, is a major problem.

No compromise on quality

As we see it today, there will be plenty of good nutritious food available in cans or glass. And one thing we can *definitely* promise . . . we will hold to our standard of quality, the *Libby* standard that gives you maximum nutritive values as well as fine flavor.

LIBBY, McNEILL & LIBBY

Pectin. Pectin is on the priority list because of its use as a war material in the treatment of burns and for other medicinal purposes. Since great quantities of this and concentrated apple juice are used in preserving, and in confections and ice cream, the increased production of these two products is desirable. Apple pomace, usually wasted, could be boiled and pressed for pectin solution.

Meat Dehydration. A satisfactory dehydrated meat product, either beef or pork, approximately 55% protein, 30% fat, less than 10% moisture and high in the B complex, iron, phosphorus, and copper, has been developed. It reconstitutes readily by adding water and is suitable for use in preparations requiring ground meat. The method involves grinding and cooking the meat before drying. Any broth is reunited with the meat during dehydration. Both cooking and drying processes are done at temperatures below the boiling point of water, and at atmospheric or slightly above or below atmospheric pressure. Four systems which could be developed commercially are used for dehydration: tunnel air dryer, roller-type dryer, rotary drum cooker-dryer, and stationary steam-jacketed cooker-dryer.

Packaging Dehydrated Foods. The need of suitable packages for dehydrated foods, made of available materials, is the determining point in the life of this new industry. The package must be moistureproof, lightproof, greaseproof, and insectproof. Cereal companies are putting up dried eggs in 5-oz. containers, similar to those used for cereals, for retail selling in England. The government has set up specifications for packaging some products. The Army requires that dehydrated vegetables be packed in a 5-gal. square can made of electrolytic tin plate body and bonderized black iron ends, and also specifies that certain dehydrated vegetables must be packed in inert gas, carbon dioxide or nitrogen. On the retail market are examples of fairly successful packaging of dehydrated products, soups in particular, but these packages would not stand the strain of storage, transportation, and temperature demanded of Army supplies.

Packages for Dehydrated Foods. The tin can as yet has no close competitor for packaging dehydrated foods. Other usable packages are: duplex glassine laminated with either No. 300 or No. 450 MSAT cellophane, using a thermoplastic seal; thermophane MST cellophane bonded to a specially coated paper and with a thermoplastic seal inserted in the cardboard carton; laminated kraft paper with a double layer of asphalt and other materials including MSAT cellophane, and using a thermoplastic seal; for sugar barrels, No. 2 slack size with two parchment liners, impregnated with wax—outer liner 45% wax and inner liner 15% wax—inner bags, slack-filled bags tight-sealed. Whatever the packaging, dehydrated foods keep best in cool to cold temperatures. Easy to pack for commercial use are dehydrated potatoes, and pea and potato soups. More difficult are bean soup, cranberries, beans, onions, and parsley, and more difficult still are cabbage, carrots, tomatoes, bananas, milk, and vegetable and chicken soup.

Testing Corn for Canning. The time-honored method of judging the proper maturity of corn for canning has been the thumbnail test. Newly-developed controlled tests for the moisture determination of the kernel include the refractive index of kernel method, gravity-separation, and moisture testing. The tested corn was canned, stored several months and then graded on the basis of tenderness. The grade was then correlated with the values obtained by the various maturity tests. The thumbnail test, when done by an experienced judge, gives a good estimate, but its success varies with the person testing. The refractive index method is comparatively accurate and very rapid. The moisture testing method, using a semi-automatic instrument is simple, low in cost, easily operated and accurate.

Removing Milkstone. There are two types of milkstone to consider: that which has accumulated and that formed daily. The first is removed by an acid detergent in solution at 135°F. which both softens and dissolves the milkstone. The second may be removed either by alkaline or acid detergents. A higher temperature is needed for alkaline removers. Plate type and tubular pasteurizers usually need double treatments.

Soya Lecithin. Lecithin, as found naturally in foods or added to them, has two important functions: it is an excellent interface agent (colloidal in behavior) and antioxidant. The latter quality makes it important as a stabilizer of vitamin A preparations and concentrates. The addition of 1% soya lecithin to soft grades of flour makes them usable for macaroni products. It is known to safeguard vitamin B_1 in foods. Used in ice cream and confections it permits the oil or fat content to be considerably reduced. It tends to stabilize edible fats during longer periods of storage. The most commonly used lecithin, extracted from soy beans, is available at reasonable prices.

Dried Eggs. Rejection of many egg powders by Lend-Lease and the Army because of unsatisfactorily high free fatty acid content has resulted in the setting up of quality specifications which demand adequate refrigeration during storage and production, sufficient and approved equipment, careful use of existing equipment, and competent supervision of sanitary practices.

Canned Foods. WPB ordered an amendment to the Canned Foods Supplementary Order M-86-a which states that grade preference of fruits and vegetables packed for military use and Lend-Lease during this year takes precedence over the can-sized preference. The government wants fancy, choice, extra standard grades in the 11 fruits and 12 vegetables that canners are required to set aside for government use. The No. 10 can which facilitates handling is first; No. 2½ and No. 2, second and third respectively. Now only top-grade fruits can be canned in the No. 10 if the canner has a choice of two grades to can. The amendment also includes complete specifications for wooden containers to be used as export boxes for canned goods. Either nailed wooden boxes, weatherproofed solid fiber boxes, or wire-bound wooden boxes are permissible. Wiring and strapping of nailed boxes or fiber boxes must be done as specifically directed by the purchaser.

Food Dehydrating. The Department of Agriculture Dehydration Committee has compiled general and specific information on dehydration processes as well as detailed blueprints and specifications for improved driers. The information includes discussions of general problems, and covers specific requirements as to variety, preparation, temperature, vitamin content, and other factors for beets, cabbage, carrots, several kinds of greens, onions, sweet and Irish potatoes, and rutabagas. Cost data for operation are included on all sizes of dehydrators. The material is free.

Ceilings Lifted. OPA announced during June that canned tomatoes and peas for military and Lend-Lease use were exempt from the price regulation, as were canned citrus foods. Unprocessed agricultural products like peas, seeds and hops that are merely dried, have been exempted from the regulation also. Ceiling prices on refined lard were fixed at the February level for wholesalers, but remain at the March level for retail consumption.

Frozen Foods. Super-insulated refrigerator cars cooled with 70% ice and 30% salt are used for transporting and distributing quick-frozen products that must be held between zero and 5°F. Warehouses should be of the same construction with increased insulation. Portable refrigeration units with dry ice are used for small shipments over short distances.

Fortified Bread. Brewer's yeast is a plentiful, palatable, and nutritionally adequate source of the vitamin B complex

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Whole Wheat Cereal

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Pre-cooked Whole Wheat Cereal

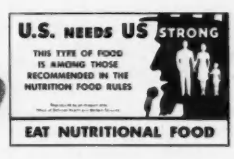
These are not merely cereals that have been fortified to provide whole grain values.

They are *natural* WHOLE GRAIN hot cereals enriched with extra natural wheat germ... making them richer in protein, minerals and thiamin than natural whole wheat.

NO COOKING NEEDED for Instant Ralston

Just stir this cereal into boiling water or milk and serve. With Instant Ralston the busiest person can have the nourishing build-up breakfast needed these days.

Ralston Whole Wheat Cereal, 40-year favorite, is exactly the same as Instant Ralston except it cooks in 5 minutes.



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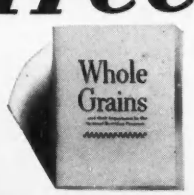

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in enriched bread, when used to the extent of 2.5% of the total bread solids.

New Flavor Developments. There has been a tendency to rely too much on coumarin as a substitute for vanilla. Propyleneglycol is becoming an important solvent for extracts. A fine true fruit flavor process has been developed which involves continuous quick freezing of the juice, extraction with alcohol and blending of the extract with the juice concentrate. Herb cultivation is increasing. Sodium glutamate, a meat flavor long popular in Japan and China, is being produced in quantity in this country for flavoring soups and other dishes.

Preserving Eggs. Urea and dimethylolurea are effective mold inhibitors. A sealing treatment for shipping eggs overseas involves conditioning with carbon dioxide to lower the *p*H, surface treatment with a disinfectant and sealing with vaseline. Packing oil-dipped eggs in moistureproof bags gives acceptable protection from spoilage during overseas shipment.

Priorities Regulation. WPB Priorities Regulation No. 10 states that all orders must be designated with their end use upon delivery. All food products and equipment and supplies for food preparation must have the symbol "14.00," even though certain items have been identified with other end uses by allocation classification symbols or by preference ratings indicating other end uses. Another symbol must also appear on each order; namely, USA (Army), USN (Navy), LL (Lend-Lease), FP (foreign purchases), or DP (domestic purchases). Many technicalities in ordering may be straightened out by referring to Priorities Regulation No. 10.

Preventing Storage Spoilage. In Britain the following lessons have been learned in wartime storage: There must be a nation-wide storage system coordinated by a national control body; a central insect-control body; all food arriving at port must be inspected for insects, and food supplies should be scattered to avoid loss from fire and air raid damage. Adequate ventilation and humidity control in storage places keep insect, rodent, and mold and bacteria damage at a minimum.

AMS Standards. Summaries of AMS standards for dried peaches (tentative), canned peas, and canned orange juice are given.

Quick Freezing. Quick freezing is the most economical method of preserving vegetables. For example, the man labor per acre in picking peas for shipment fresh is 102 hours while that in picking them to be frozen is 23 hours. The total cost of the fresh, per acre, is $82.31; the frozen, $76.60. The yield per acre is 620 lb. and 1965 lb. respectively. Of all vegetables harvested for freezing, green beans yield the highest per cent of edible portion and corn the lowest.

Dehydration. West coast dehydrators originally designed to handle prunes, raisins, apples and other fruits are being used in dehydrating vegetables. Air blast recirculating dehydrators are used which produce better results than sun and air drying, increase yields, and release the sun-drying fields for other purposes. To prevent deterioration in storage, either by insects, enzymatic or oxidative changes, souring, fermentation, or molding, fruit should be packed with an effective fumigant in insectproof containers and held in cold storage.

Maintaining Electric Motors. Lists a schedule for weekly, semi-annual, and annual inspections of both A.C. and D.C. motors. A card should be kept for each motor with repairs and inspections listed. Proper lubrication is one of the most important points in care of motors, which should receive systematic and periodic cleaning and general overhauling every 5 years or oftener if necessary.

Metal-Saving Bag. DuPont de Nemours has fabricated a new paper bag with moistureproof, odorproof cellophane. It is being adopted by coffee packers to keep their product in fresh condition. It requires no critical material in its make-up.

Sweet Potato Candy. "Yam-Yum Nougat" is a candy made from sweet potato and sweetened with Nulomoline.

Seasoned Salt. "Lawry's Original Seasoned Salt" contains rice flour and cornstarch artificially flavored with monosodium glutamate, sugar, herbs, and flavoring. It enhances the flavor of meats, fish, eggs, cheese, salads, soups, gravies, and other foods.

Shatterproofing Window Glass. Arabol Manufacturing Company has marketed a paste intended to minimize the hazard from broken glass during a bombing raid. Used in pasting cloth or netting on the inside of window glass, it retains its elasticity, is not affected by changes in heat and humidity, and may be removed with water.

Synthetic Hard Rubber. A synthetic hard rubber made from Ameripol, will withstand temperatures 100°F. higher than hard rubber made from natural crude material.

Spice Contamination. Because spices are so highly contaminated with bacteria when imported, sterilization is essential. Thermal sterilization of pepper, under relatively mild conditions, results in a 10% loss in flavoring power. Ethylene oxide is particularly effective.

Juice Extractor. A new extractor produces citrus juice retaining its natural color, flavor, aroma, and nutritive value. The fruit is cut only at one end to avoid cutting seeds and exposing the pulp to the air.

Suspension Agent. Quince seeds are used in producing an extract which will hold chocolate particles in suspension, by agitating the seeds in water for 4 or 5 hours at about 145°F. They are screened out of the thick extract from which the mucilagenous product is precipitated by adding a suitable agent. The precipitate is then dried and powdered.

Butter. Adding 10 to 13% salt to cream gives 90 to 92 score butter while unsalted cream yields only 86 to 89 score butter. Salted butter must be put in stainless steel cans.

Storage of Chicken. After 40 hours storage at 35°F., the aroma and flavor rating of chicken was reduced.

Paper Milk Containers. Paper mills make a systematic effort to meet requirements as to bacterial counts of milk container products. Calender water and slime are bacterial sources which must be watched.

Ice Cream Freezer. Ice cream may be rapidly frozen in a continuous flow and in a minimum amount of time, with no large crystals formed in the process and no need of large hardening rooms in which to store the product.

Formulas for Food. A section giving formulae in weights and the directions for combining ingredients includes a barbecue mixture for hams, consisting of 1 oz. each of bay leaves, cloves, nutmeg and majoram and 2 oz. each of black pepper and mustard. Crush spices, put in a muslin bag, and cook in one gallon of water for 1½ hours at 170 to 180°F., then remove and squeeze bag dry, and add to liquid the following: 1/2 lb. paprika, 1½ lb. brown sugar, 1 gal. tomato purée, 1½ pt. vinegar, full strength, and 2 oz. mapeleine.

HORWATH HOTEL ACCOUNTANT

Vol. 22, June 1942

* Excess in sugar allotment.—p. 2.
* The trend of business in hotels.—p. 2.

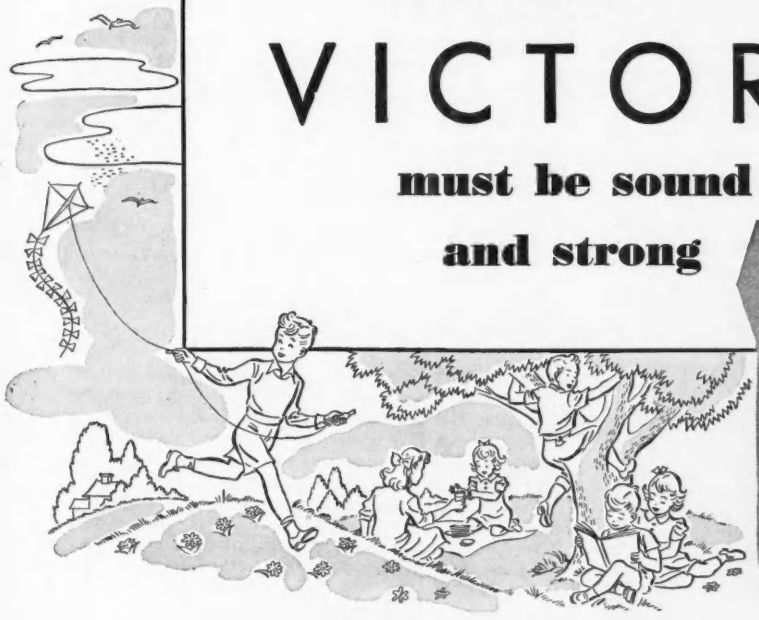
Sugar Allotment. Hotels which make their own pastry or beverages for consumption on the premises are entitled to a sugar allotment of only 50% of their 1941 consumption.

Food Costs. A total food cost rise of 4% in March against 3% in February is reported. The wholesale food price index was less sharp. The total beverage cost was 1% lower this March than a year ago.

The children of

VICTORY

must be sound and strong



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Vitamin D Potency of Foundation-licensed Products

From the fire of our present trials will come a new concept of proper nutrition. From the ranks of American children must come the strength, the healthy vigor, and the staunch leadership the world will so sorely need.

No small part of the health and vigor required for these new responsibilities depends upon the development of bodies well formed and strong, upon teeth that are sound and healthy. And these largely depend upon how well Vitamin D is given the chance to mobilize food-calcium for bone and tooth structure. Calcium is also needed for its vital mission with relation to muscle tone, nerve function, blood clotting, and normal heart action.

The Foundation Seal, or the imprinted name of the Foundation itself, is assurance that all foods and pharmaceuticals so identified can be accepted as wholly reliable sources of Vitamin D, tested periodically for potency.

WHAT IS THE FOUNDATION?—Let us mail you the booklet, *Scholars from Dollars*, the story of the Foundation and its work. Established in 1925, not for private profit, the Foundation receives and administers patentable discoveries, voluntarily assigned. Through licensing arrangements with reliable concerns, funds are obtained. All net avails are devoted to the furthering of research. Foundation trustees serve without compensation. Send for your copy of *Scholars from Dollars* . . . today.

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HOTEL MANAGEMENT

Vol. 42, July 1942

* Housekeeping organization.—p. 37.
* Features of banquet service.—p. 42.
* Food preparation.—page 47.
* What Statler hotels get from the New York research kitchen.—p. 50.

Housekeeping Department. Statler maids have an 8-hour day beginning at 7:30. In this time they clean 16 rooms, taking approximately 5 minutes to make a bed, 15 minutes to clean a bathroom, and 30 minutes to clean a room complete. They range in age from 18 to 50 and must not weigh over 145 lb. Verbal and written instructions are given all new maids. They accompany an experienced maid when they first go on duty and are under the direction of the assistant and floor housekeepers. There is no check made on linen going to or coming from the laundry. The laundry merely sees to it that the par is kept in each linen closet. Guest room linen is sent down a chute by the maids and restaurant linen is taken directly from the dining room to the laundry by bus-boys.

Banquet Service. The Detroit Statler is equipped to handle banquets for as many as 1400 persons. One hour is allowed for service of a wedding breakfast, 30 minutes for service of club functions, and 80 minutes for convention dinners. Much of the banquet food is prepared in the main kitchen but it is all served from the banquet kitchen. Full "French Service" is available for all groups; each waiter serves 12 people and is hired extra for banquet service. Soliciting is done by personal contact rather than through letter writing. The aim is a 33% food cost.

Food Preparation. Menus are made out a day in advance with careful consideration of the market, availability of goods and seasonal foods. Guest suggestions are welcomed. Experiments are carried out on new dishes in the New York research kitchen before they are put on the menu. Thermostatic control is used on all heating devices in the kitchen. A set of printed standards is used as a guide in buying. One casserole dish is included on every day's menu. In order to conserve, definite weights are used for all portions of meat served. Only fresh fish is used and all meat is cut by hand. The Detroit Statler carries an inventory of 1142 items. Stock room shelves are wood and bins are metal. Physical inventories are taken of foods once a month and of silver and glassware once every 4 months. The dishwashing room is soundproof. Glasses are washed separately. A water temperature of 180°F. is maintained by the use of thermostats on the machines. Garbage is stored in non-refrigerated rooms until it is given away. Rubber-tired trucks are used in moving dishes from the dishwashing room to the dish section where they are stored at 110°F. in dishwarmers. Silver is burnished once a week. All cooking pots are copper and are cleaned with chip soap and a detergent. The bakery is open 15 hours daily. The pastry chef and head baker determine what products are to be made daily in order to assure a menu variety. Both all-purpose and pastry flours are used. The food cost on cakes is 34 to 50%, pies 18 to 45%, doughnuts 25%, breads 43%, rolls 43%, French pastry 18%. A 20% butterfat is maintained in ice cream, all of which is made in the hotel, and 5 flavors are always available.

Research Kitchen. The research kitchen tests all recipes and perfects quantity recipes chosen from the family-size recipe by home economists and the catering department executives as the best. When a recipe is perfected it is sent out to Statler hotels as a "tested recipe." After it has been used without complaint for 3 months it becomes a "standard recipe." New equipment is checked and tested and all small equipment and portions are standardized in this department.

HOTEL MONTHLY

Vol. 50, August 1942

* A blackout blind.—p. 62.

Blackout Blinds. A new type of blackout blind, manufactured by the Clopay Corporation, costs about as much as black paint for the same purpose, and is one-seventh the cost of opaque cloth. It is made of heavy, crepe fibre and is fireproof. Side panels are available for permanent installation at the end of a series of windows. It is also available for outside installation on skylights.

ICE CREAM TRADE JOURNAL

Vol. 38, July 1942

* Corn syrup solids, their use in ice cream. J. W. Knechtges and H. H. Sommer.—p. 14.
* Reducing oiling off of frozen cream used in ice cream. J. C. Hening.—p. 20.
* Manufacturing problems. P. H. Tracy.—p. 26.
* Research, the basic flavor of ice cream mix. B. I. Masurovsky.—p. 40.

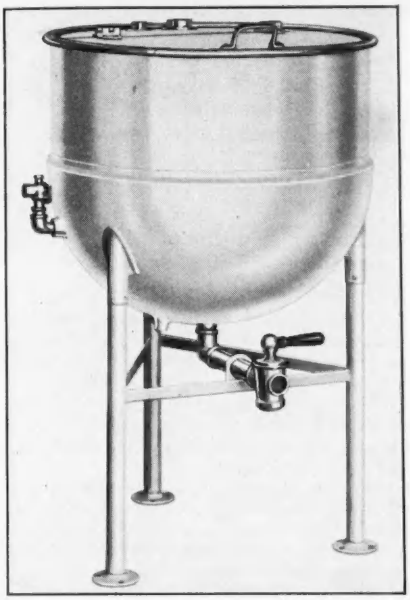
Corn Syrup Sweetener in Ice Cream. Although the sweetening power of corn syrups is less than sucrose, they tend less to lower the freezing point of ice cream mixes. Larger proportions of corn syrups may be added to equal sucrose sweetness. Replacement of sucrose by corn syrups has been found to be best in the proportion of 25 to 33⅓%. With this proportion there is no noticeable change in taste, body, texture, or melting behavior of the ice cream. Corn syrups tend to improve the delaying of sandiness and shrinkage. In melt-down tests they have shown a sparing action in ice creams with moderate stabilizer content, and the amount of stabilizer in mixes will have to be moderate in using them with the corn syrups. The whipping ability is not affected. The acidity of the corn syrups has no significant effect. A consumer choice comparison of sucrose ice creams and those with corn syrup showed that there was no significant preference.

Oiling Off of Frozen Cream. In using frozen cream for manufacturing ice cream there is always the problem of oiling off. Various methods of melting frozen cream will affect the stability of the emulsion, and there are even variations when using the same procedure. In a recent study it was brought out that cream separated from milk held cold, oiled off less than regular cream with sugar added prior to freezing.

Ice Cream Problems. If ice cream melts too slowly perhaps the cooler is not working properly, causing the mixture to be improperly cooled, or excessive fat clumping is present due to homogenizing at too low temperature, or the ice cream was drawn off at too low a temperature or in too stiff a condition, or the amount of gelatin is slightly in excess of need. Vegetable flavors for ice creams are not generally satisfactory. Pumpkin, carrot, and frozen spinach are the most promising. Corn has been used. Amounts of different vegetables needed for flavoring vary considerably.

Flavor of Ice Cream. In judging the flavor of ice cream it is well to consider the basic flavor of the mix as well as the finished flavor. The basic flavor is influenced by the ingredients of the mix, which means that good flavor is correlated by sanitary, fresh, good quality ingredients. The use of certain equipment in mixing may give off flavors to the mix; namely copper, woody surfaces, particularly yellow pine. The basic flavor is also influenced by the proper balancing of butterfat, and properly homogenized serum solids-not-fat. Sterilizing agents used on equipment may also taint mix.

THE NEW GROEN *Defense* Kettle



ALL GROEN Kettles can be had in this new Stainless Steel-*clad* material.

WRITE FOR OUR NEW CATALOG

Shows the best in kettles for every purpose. Get it.

COMBINES ALL FEATURES OF OUR CELEBRATED ALL-STAINLESS KETTLES

Conceived to conserve critical metals for Uncle Sam . . . yet typically GROEN from top to bottom. Identical in features with our famous ⅔ Jacketed Stainless Steel Models . . . but constructed of Stainless Steel-*clad* material so the inner surface of body, and the cover, are Stainless Steel . . . a GROEN-pioneered idea that uses only a fraction of the chrome and nickel usually required.

QUICK-COOKING—SANITARY—DEPENDABLE

Unique GROEN Super-Jacket utilizes entire jacketed portion as heating area. Assures even heat distribution . . . prevents "hot spots". . . effects quick heat transfer . . . produces 15% to 20% faster boiling. Inner surface of kettle is Stainless Steel, hence pit-proof, acid-resistant, absolutely sanitary. Dairy type outlet and cock facilitate easy cleaning and sanitation conforming to strict hygienic demands.

IF YOU HAVE PRIORITY, WRITE

We'll do everything we possibly can to supply you promptly with this or any GROEN kettle if your needs are covered by the necessary priority. Write us.

GROEN MFG. CO. (HALF A CENTURY OF FINE KETTLES)
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Planning a Nutrition Laboratory in a School of Nursing	.30
Glossary of Dietetic Terms	.25
Illustrative Material for Teaching Student Nurses (1941)	.20
BIBLIOGRAPHIES	
Adequate Diets at Minimum Cost	.10
Meat Purchasing for Institutions	.10
Normal Nutrition Annotated Bibliography 1940–1941	.15
Supplement to Normal Nutrition Annotated Bibliography 1941–1942	.10
Role of Nutrition in Health Education	.10
Role of the School Lunch in the School Health Education Program	.10

Send order and remittance to

THE AMERICAN DIETETIC ASSOCIATION

185 North Wabash Avenue, Chicago, Illinois

MODERN HOSPITAL

Vol. 59, September 1942

* Feeding army patients. B. B. Bowen.—p. 94.
Typical ward menu—regular.—p. 94.
Soldier patients like these salads.—p. 95.
* It pays to buy right. P. G. Zaramba.—p. 96.

Feeding Army Patients. The Army dietitian with initiative has a great opportunity to be of inestimable value in an administrative and educational capacity as well as a therapeutic one. In frequent conferences with the mess officer who is responsible for the management, finances and accounting of the mess and the mess steward, a noncommissioned officer, she can be of great assistance in organizing the department and training the rapidly changing personnel. She plans menus, prepares requisitions, supervises purchasing, preparation, storage and distribution of food in all messes. She writes and supervises the preparation of all special diets. Above all, the Army dietitian must be able to differentiate between those responsibilities which are hers alone and those in which she is a supplementary aid.

Buying. Studies reveal that hospital methods of purchasing vary. The general practice is to receive bids either written or by telephone. In most cases someone makes personal selections, but there is no general practice as to the grading system used. Some use their own systems, others use the government grades. Each hospital should set up its own standards of specifications to cover proposals and to check deliveries. Specifications vary widely from time to time because of seasonal variations in fruits and vegetables. Specifications and grades for meats have been simplified. Since grades are not standardized, purchasing should be through reputable dealers, using their bids as an index for market values pending personal inspection. Inspect and select the produce at the market. The value received is governed by constant vigilance in buying proper grades, checking of specifications, and using common sense. Explains specifications and grading of some foods.

NATION'S SCHOOLS

Vol. 30, July 1942

* Metamorphosis of a candy bar. N. Fredenburg.—p. 47.
* Let's build future citizens on a foundation of good food. L. Evans.—p. 48.

Vol. 30, August 1942

Hell-Fer-Sartain now serves a school lunch.—p. 47.
* How one cafeteria "prepares."—p. 48.

A Plate Lunch Rather Than Candy. When the candy counter of the Topeka High School (Kansas) cafeteria was closed during the luncheon hour a great increase in counter sales occurred, chiefly of desserts. A bargain plate lunch was then planned, to sell for 10¢. Since mashed potato and gravy and hot rolls were general favorites, they were included with another vegetable and salad as alternates and invariably a meat or meat substitute or other hot dish. As a result vegetable sales increased three or four times, and dessert sales dropped to normal.

School Lunch and National Nutrition. When a nation's health is at stake, would it not be well to have a part of the government's expenditures directed toward subsidizing community lunch programs: Not only would part of the nutritive values be supplied each day, but an excellent foundation for better food habits could be established in each child.

Meals in Emergency. In the Roosevelt High School, Bronx, New York, every employee has specific duties to perform in the event of an air raid, after which he reports to the sandwich unit or storeroom. Each Monday a double order of bread comes to the school so that there will be a carry-over sufficient to take care of emergency needs. Opened cases of canned goods which can be used without heating are in the storeroom and employees and students are instructed to carry as many cans as possible to the raid shelter. In case of an extended emergency, meals would be served under the supervision of the dietitian and with the help of the home economics department.

RESTAURANT MANAGEMENT

Vol. 51, July 1942

Unions back down!—p. 8.
* Poster for "food for victory" campaign.—p. 26.
* Prepare it scientifically.—p. 27.
* Guard against waste.—p. 28.
How to increase your profits and sell "nutrition" with salads.—p. 32.
* Feeding for industrial strength.—p. 37.
* Practices that produce profits. V. A. Harrison.—p. 40.

Vol. 51, August 1942

Introducing "management's" wartime cost control system.—p. 18.
* General Motors feeds them well.—p. 44.
* Putting nutrition on display.—p. 46.
* Feeding workers at cost.—p. 47.

Poster News. The Restaurant Association Quantity Cookery Committee prepared a poster for the "Food for Victory" campaign which is captioned, "We Save for Uncle Sam." It lists 5 suggestions for food conservation; namely, wise buying, careful menu planning, scientific preparation, professional service, and guarding against waste. It is red, white and blue and may be purchased from *Restaurant Management* at 6 for 25¢.

Scientific Preparation. Canned foods do not retain their vitamin value forever so keep your stock circulating and use the oldest goods first. Never peel and cut up foods and then let them stand as the vitamins are rapidly passed from food to water. Always cook foods whole or with cover to preserve the most food value. Because canned and frozen foods are a choice selection and are put up at the peak of their freshness and ripeness they often are higher in vitamin value than fresh foods which have been shipped. Potato stock may be used in place of part of the milk in breadstuffs. Individual thimble-size aspics are suggested for cold plate garnishes.

Guard Against Waste. Cold cereal may be sliced and fried and served as a patty, on plate combinations, or with honey or maple syrup for breakfast. Orange shells may be used for filling with salads, desserts, sweet potatoes, etc. To remove a too-salty taste from soup slice a raw potato into it and boil for a short time. Keep a low inventory to reduce waste from spoilage, theft, and carelessness. There should be a complete turnover every week. To preserve watermelons and cucumbers, rub the surface with a thin film of salad oil and wipe. Never keep shucked oysters over a few days; hold them between 35 and 40°F. Be careful in the use of "free" foods such as butter, relishes, rolls, etc. Butter and mayonnaise, mixed, make an excellent spread which is less expensive than butter alone. Always weigh goods on delivery to be sure you get your money's worth. To keep the gas bill down, wash stove burners twice a week with a solution of 1 gallon of water, 2 tablespoons washing soda, and soap flakes. Use a meat thermometer to save fuel.

"Feeding for Industrial Strength." A new section in *Restaurant Management* has a two-fold purpose: to assist subscribers who are feeding the armed forces in post exchanges and workers in industrial plants, and to show readers what is being done in mass feeding so that new ideas may be further developed and applied to the commercial field.

Practice for Profit. To increase serving speed, individual portions are ready when the guests come in. Meat portions are cut, except in the case of corned and roast beef. Meats are served with a side line in order to maintain better than

Why do so many professional people take vitamin supplements?

HAVE a round-table discussion with a group of professional people. Ask them, "How many of you take vitamin supplements?" The answer "I do" will usually travel right around the table.

Visit doctors in their homes, in their offices. Check up on where they stand. According to a recent survey, more than 70 per cent of them take extra vitamins.

Go down to Washington and talk to key men and women—people whose names are newspaper bywords. Do they supplement their diets with extra vitamins? The answer again is yes.

Survey after survey proves that those who know the most about vitamins are most apt to supplement their diets with them. Why? "Because," as one noted man in this field says, "there

are few of us who are diligent enough, persevering enough and intelligent enough day in and day out to select and eat a good diet." Then, too, experts are the very ones who know how difficult it is to get all the vitamins all the time. Processing, storage, transportation and cooking all take their toll of these substances in foods.

Today, many professional people who do take vitamin supplements prefer Vimms. Here's why:

1. Vimms supply all 6 vitamins known to be essential in the diet, in the full daily minimum amounts recommended by the Government. Doctors endorse this

6-vitamin formula.* (See chart below.) And note that Vimms also supply 3 minerals that belong with these vitamins—Calcium, Phosphorus and Iron.

2. Vimms are good-tasting—easy to chew or swallow. Children like them.

3. Vimms are inexpensive (50¢ for 24 tablets; $1.75 for 96 tablets). No other product at any price can match all the advantages in Vimms.

*Jour. of A. M. A. July 18, 1942; pp. 948-9.

VIMMS MEET OR EXCEED OFFICIAL MEDICAL STANDARDS

Gov't recommendations on which official medical standards are based	VITAMIN	Compare the Vimms formula (3 Vimms) on all 6 vitamins
4,000 USP Units	A	5,000 USP Units
1,000 micrograms	B_1	1,000 micrograms
2,000 micrograms	B_2	2,000 micrograms
600 USP Units	C	600 USP Units
400 USP Units	D	500 USP Units
10,000 micrograms	P-P (Niacin Amide)	10,000 micrograms

In addition, Vimms supply these vital minerals:
CALCIUM 375 mgs. **IRON 10 mgs.**
PHOSPHORUS 250 mgs.

If you haven't tried Vimms, we'll be glad to send you a professional sample. Write to Lever Brothers Company, Dept. AD-8, Pharmaceutical Division, Cambridge, Mass.

A | B_1 | B_2 | P-P | C | D | CALCIUM | PHOSPHORUS | IRON

average prices. A 50% reduction in the number of dishes used has cut down breakage and made for greater efficiency of handling. The evening business has been increased by appealing to family trade. Children are given a balloon or a free dish of ice cream. Advertising has featured the night rather than the noon meal. Plain, simple menu phraseology speeds up ordering and service. No noon dish is ever served again at night. A rotating menu is used; that is, the menu served today was served a year ago.

Industrial Feeding. A typical menu for a day and variety from 2 weeks' winter menus illustrate low-priced nutritious meals in an industrial cafeteria. Three 20¢ special plates offer meat, potato, and choice of vegetable. Desserts sell at 6¢ and 7¢, sandwiches and salads are 10¢ each, vegetables are 5¢ and 6¢, and meats, 15¢.

Nutrition on Display. Three typical late summer menus from the Ford Motor Company cafeteria are given. The counter set-up and menu form give emphasis to fruit juices and salads. Ordering is à la carte from a wide choice of meat, cereal, vegetable, and dessert menu items.

Feeding Workers. "Food for Victory" is the theme in an Illinois industrial cafeteria. A wide variety of appetizers, meats, vegetables, toasted sandwiches, and salads, is supplemented by a large choice of desserts. A sample menu is given.

Newtrition (A Vitamin Nightmare)

You're healthy, you think, in the pink of condition?
Come, visit my class in Wartime Nutrition
And learn about Vitamins, or in dismay,
You might fall apart like the old one-hoss shay!
There is Vitamin A, born in nineteen-eleven,
A terrific begetter—he begat twenty-seven.
Some have been christened, their names duly dated,
While others by symptoms are still "postulated."
You may be neuritic? It's not just a notion?
A Thiamin cocktail for you is the potion.
But if you're rachitic, don't make a mistake.
De-hydro-cholesterol is the one you must take.
A_1, found in carrots, in blackouts to see;
And for those who are sterile it's Vitamin E.
If always you've thought that an egg's light and airy,
I warn you—from now on please try to be wary.
It's a power-house charged with B_2 Riboflavin;
Neglect it and the road to skin troubles you're paving.
Adrenal necrosis, pellagra, and scurvy
May get out—they're all very subtle and nervy.
Pantothenic, Ascorbic, and try Nicotinic
If forty you've passed and seek a youth clinic;
They'll liven gray hair to bright lustrous tones
And even the blue-bloods need the Naphthaquinones.
My friends, I'm not joking, you must have this riot
Of "Vitamins Plus" in your plain daily diet.
The Waves and the Waacs train to keep in condition—
But me? I'm the victim of newer nutrition!

MILDA W. DEFANDORF

If they need IRON... CALCIUM

Recommend

BRER RABBIT MILK SHAKE *

It's Rich in Both!

In Brer Rabbit Milk Shake* children not only get a substantial supply of iron, but they may also enjoy the healthful benefits to be derived from the proteins, calcium and vitamins contained in milk.

Brer Rabbit Milk Shake* is a fine suggestion for those who do not normally like milk, and those who do not drink enough milk.

Three tablespoons of Green Label Brer Rabbit Molasses, added daily to the diet, supply 3 mg. of *available* iron. Or the amount may be increased at the direction of the physician. Penick & Ford, Ltd., Inc., New Orleans, La.

**Made by adding 1 tablespoonful of Brer Rabbit Molasses to a glass of milk*

Brer Rabbit New Orleans Molasses is second only to liver as a food source of available iron

TABLE[1]

	Total iron mg/100 gm	Per cent availability	Available iron mg/100 gm
MOLASSES "A"[2]	3.2	97	3.1
MOLASSES "B"[2]	6.0	85	5.1
BEEF LIVER	8.2	70	5.7
OATMEAL	4.8	96	4.6
APRICOTS (dry)	4.1	98	4.0
EGGS	3.1	100	3.1
WHEAT	5.0	47	2.4
RAISINS (Muscat)	3.0	62	1.9
PARSLEY	5.8	50	1.6
BEEF MUSCLE	3.2	50	1.6
OYSTERS	5.1	22	1.1
CABBAGE	1.5	72	1.3
MUTTON	2.6	24	1.2
LETTUCE	3.0	63	1.9
SPINACH	5.8	20	0.5
	1.8	50	0.9

[2]Brer Rabbit Molasses—Gold Label (light, mild flavored) Brer Rabbit Molasses—Green Label (dark, full flavored)

1. Am. J. Dig. Dis. Vol. VI No. 7 (Sept.) pp. 469-62, 1939

There is 1 full mg. of available iron in every tablespoonful of Green Label Brer Rabbit New Orleans Molasses.

TWO TIMELY EDUCATIONAL FILMS FOR CLASSROOMS

Dramatize Nutrition Textbook Truths with these Timely Movies

"V-MEN"—Shows how scientific research proved that modern protective cooking saves vitamins. 16 mm. with sound—running time 17 minutes.

"40 BILLION ENEMIES" Full-color film featuring importance of proper food storage and preservation. 16 mm. with sound—running time 26 minutes.

These authoritative, noncommercial films dramatize the principles of proper nutrition. They provide a practical demonstration of the application of those principles to everyday living. Both have been designed especially for classroom and study group showing.

"40 Billion Enemies" shows how to place foods in an electric refrigerator for maximum protection against loss of vital food values. It also emphasizes proper care of an electric refrigerator in the home.

"V-Men" is a fast-moving, authentic film stressing the importance of proper cooking methods to preserve the vitamin content of foods. It portrays the vital contribution women can make to the national drive for better nutrition.

Mail the coupon today. Be sure to indicate alternative dates as these films are in constant great demand. Films shipped prepaid—you pay only return charges.

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ELECTRIC APPLIANCE DIVISION • MANSFIELD, OHIO

Visual Education Section 2022,
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Please send me "40 Billion Enemies" ☐ "V-Men" ☐ for showing on either

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News Notes

Role of Women in the War Effort. A conference to discuss this problem was held at the Hotel Roosevelt, New York, September 24, sponsored by the National Board of the Y.W.C.A., the National Federation of Business and Professional Women's Clubs, Inc., and the National Women's Trade Union League. Nelda Ross, President of the American Dietetic Association; Lenna F. Cooper, chairman of the War Activities Committee; and the editor of this JOURNAL represented the Association. Among the participants in the morning session were: John J. Corson, chief, U. S. Employment Service; Minnie Fisher Cunningham, U. S. Department of Agriculture; Mrs. Elinore Herrick, director of personnel, Todd Shipbuilding Company; Katharine F. Lenroot, Children's Bureau, U. S. Department of Labor; Louise Moore, in charge of trade and industrial education for girls and women, U. S. Office of Education; and Lilian Sharpley, national board, Y. W. C. A. During these sessions it was pointed out that 80 per cent of all occupations are suitable for women. Also, it was reported that according to recent figures the national registry of scientifically trained women represents 65 scientific and professional fields. Margaret A. Hickey, chairman of the newly formed Women's Policy Committee of the War Manpower Commission, stated that 5 million women, not now employed, must be recruited and placed in war industries before the end of 1943, which means that many married women with children, living in areas where inadequate housing facilities prevent importation of labor, must be drawn into jobs and adequate care provided for their children. Miss Hickey designated community services as the greatest field of activity for women, and stated that these services have suffered because of the transfer of volunteer and professional workers into "so-called essential war work." Dr. Eveline M. Burns, National Resources Planning Board, emphasized that women war workers should guard against being considered "marginal workers" or "spare tires" to be thrown out of work as soon as the war is over.

Nutrition Course for Restaurant Owners. Louise Longworth writes that at the request of the Massachusetts Restaurant Association she will give a course in nutrition through the Department of Education, State of Massachusetts, for restaurant operators and managers.

Nutrition Exhibit. An exhibition on nutrition is being held at the Newark Museum, Newark, New Jersey, October 1 to December 31. It includes charts, photographs, and large wooden cutouts, also a group of life-size figures representing a typical family of five, accompanied by charts to indicate the weekly amounts of food necessary to meet nutrition requirements. Summaries of school lunch programs, surplus marketing plans, Red Cross activities, and the work of consumer groups, boards of health, and nutrition councils are also being presented. A display of changing menus, supplied by the New Jersey Department of Agriculture, is posted in the exhibit each week, offering a nutritive diet for liberal, moderate and thrifty budgets.

Pentagon Building Food Service. A call has been issued by John N. Charters, manager of the new Pentagon Building, for women to work in various capacities in the food service, which will constitute the largest restaurant operation under one roof in the world. It is assumed that the "more responsible supervisory positions" would include dietitians. The building is located in Arlington, Virginia, and is scheduled for completion about November 1. It is designed to house the offices of 30 to 40 thousand employees of the War Department.

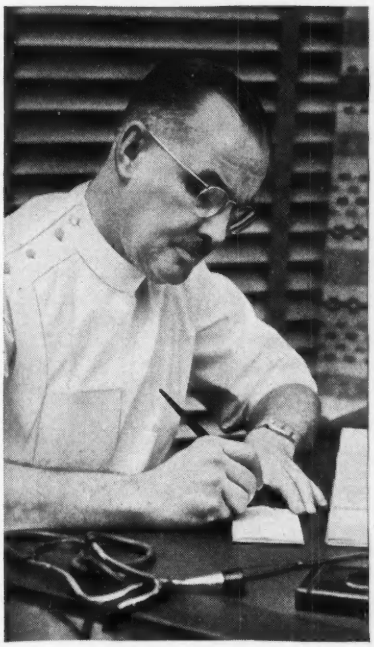
Registration at Florida State College for Women. Anna M. Tracy writes that "the enrollment of students majoring in dietetics and institution management is two and one-half times as great as a year ago."

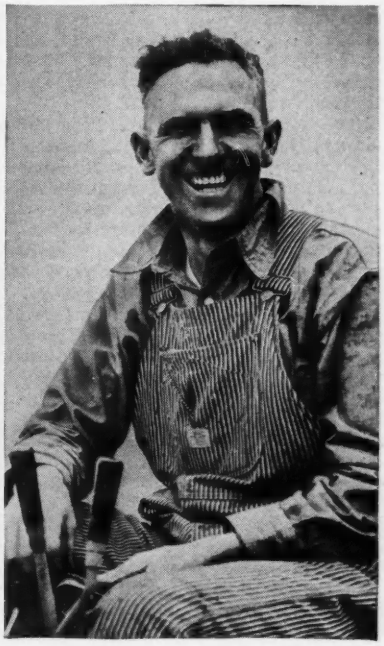
New Government Films. The New York University Film Library, which has been named by the Office of War Information as a depository for U. S. Government war films and films on Latin-America, announces that 40 films are now available; among them, "Democracy in Action"; "Safeguarding Military Information"; "Women in Defense"; and "The Bounteous Earth" (Latin-America). Three to five new titles will be released each month, and all films are available to educational groups at 50 cents for each subject and 25 cents for each additional film of the same series sent at the same time, transportation to be paid both ways by the user. All films are 16 mm. sound. A complete catalogue may be obtained on application to New York University Film Library, 71 Washington Square South, New York.

Mental Hygiene Pamphlets. The New York City Committee on Mental Hygiene, in a letter dated September 1942, over the signature of Dr. Nina Ridenour, announced that copies of the pamphlet "Balanced Diets and Balanced Personalities," summarized in the Current Comment section of this JOURNAL, are available at 10 cents each for single copies, 5 cents each in quantities of 25 or more, and 4½ cents each in quantities of 100 or more, on application to the above-mentioned committee at 105 East 22nd Street, New York. This is one of several pamphlets which the Committee publishes on mental hygiene topics of special timeliness, and which "represent the work of a number of people and the carefully considered opinions of authorities in the field."

News from the Food Field. The *Food Field Reporter*, August 31, includes an interesting item about the process used for dehydrating pork. H. H. McKee, of Swift & Company, is reported as stating that the amount of fat in pork as well as the physical structure of the meat, which does not permit reabsorption of the liquor during the cook-

The front behind the front...





THOUSANDS of miles from the fury of battle, America fights on a quiet front. The fighters here are the doctors who watch over the country's health, the housewives who prepare America's meals, and the farmers who grow the nation's food. They fight to make Americans stronger and healthier through better nutrition.

Prominent among the foods recommended by the National Nutrition Program are milk and milk products. And this is where a company such as Borden's can make important contributions.

Our long and extensive research at Borden has always been focussed on milk and its place in human nutrition.

In our laboratories are many men who have spent their professional lifetimes breaking milk down into its innumerable fractions—trying to determine the nutritional value of every component.

Much of the work these men have done has been pure research. But they have been also concerned with the practical problems of the industry. Their most noteworthy contribution on this side has been the development and perfection of Borden's unique Quality Control.

Quality Control is not just a name. It is the rigid system of laboratory checks and balances which safeguards the purity and uniformity of every Borden product . . . from Beta Lactose to Evaporated Milk, from Biolac to Ice Cream.

Quality Control is the simple, but very important reason why the name Borden is a mark of reassurance on any milk product.

THE BORDEN COMPANY
350 MADISON AVENUE • NEW YORK CITY

Borden — BETTER NUTRITION THROUGH MILK RESEARCH

ing process, makes several extra stages necessary in processing. The pre-cooking, which takes from 1½ to 2 hours, yields a mixture of cooked meat, the natural liquor, and fat. All the contents of the kettle are then run through a press which squeezes out the liquor and the fat. The latter is skimmed off, leaving the liquor in very dilute form. Most of the water is then evaporated until the residue is of the consistency of a thick gravy. The pork from which the liquor and fat was removed is ground and then fed into a rotary drier. It emerges dried down to about five per cent moisture content and is thereupon mixed with the concentrated liquor and part of the fat. The resultant product, dehydrated pork, has a 40 per cent fat and 10 per cent moisture content.

Two courses in the dehydrating of vegetables will be given by the federal government for operators of commercial dehydrating plants at Western Regional Research Laboratory, Department of Agriculture, California, and at a large canning plant in Rochester, New York. The schools will be staffed by technicians from the Bureau of Agricultural Chemistry and Engineering, the Bureau of Plant Industry, Oregon State College, University of California, and the Massachusetts Institute of Technology.

Dehydrated vegetables for the armed forces have been exempted by OPA from operation of general maximum price regulation to assure unhampered development of these products. The entire 1942 production of dried apples, apricots, peaches, pears, prunes and grapes (raisins) has been frozen by the WPB to make products available to the armed forces and for Lend-Lease. It has also been ordered that all raisin-type grapes be used to produce raisins to the exclusion of those employed for wine and fresh fruit.

A number of new plants for manufacture of dry skim milk have been installed to absorb heavy increase of whole milk deliveries to plants, resulting increased production, and to meet Lend-Lease demands. Production of dry milk solids increased 30 per cent in the first six months of this year over the same period last year as a result of Lend-Lease consignments, while domestic sales decreased 20 per cent for the same period.

The latest research in the field of food preservation, including canning, refrigeration, and dehydration, was the subject of a symposium held by the agricultural and food division of the American Chemical Society, meeting in Buffalo, September 7–11. Vitamin research was covered in an all-day session sponsored jointly by the food and biological chemistry divisions.

The General Foods Corporation recently presented the American Red Cross with $11,000, representing a profit on packages for American prisoners of war which were packed at a cost lower than estimated, according to the *Food Field Reporter*.

Ethel Pottiger, dietitian for the Cincinnati Red Cross, it is also announced, was the guest speaker on the initial broadcast of a campaign by station WLW, Cincinnati, designed to help housewives to pack nutritive lunches for war workers.

Lend-Lease Foods. According to the September *Consumers' Guide*, nearly 300 different kinds of food have been bought by AMA for the United Nations, including Iowa pork, Wisconsin milk and cheese, Idaho and Maine potatoes, dried beans from Ohio and Michigan, fruit juices from Florida and California, etc. Among the ports to which the food is being sent are Malta, which received enough powdered whole milk to make some 2¼ million quarts of milk in June, and Cape Town, to which concentrated foods, essential to fighters on the move, have gone.

Food and Drug Administration Rulings. Notices of judgment against food manufacturers, listed in the July issue of the bulletin distributed by the Federal Security Agency in accordance with the Food, Drug, and Cosmetic Act, include the following: several judgments against dairies for adulteration of butter, in that it contained excessive mold or that it contained less than 80 per cent by weight of milk fat; against egg packers for shipping frozen eggs and liquid egg yolk which were in whole or in part decomposed, and dried egg yolk adulterated by addition of soy bean flour with added carotene; against fish packers for adulteration of frozen fish; against candy manufacturers for misbranding certain candies as "slenderizers" and for adulteration and preparation in unsanitary conditions; against fruit processors for adulteration of frozen cherries by addition of sugar and because of presence of maggots, and misbranding of several canned fruits in that the substandard legend required by law was omitted; against poultry dealers for shipment of poultry that was in whole or in part the product of diseased birds; and against flour manufacturers for misbranding and adulteration of flour. Other cases cited included misbranding of "egg noodle and chicken dinner" product in that all of the meat was packed near the outside of the jar and a wheat protein derivative, which should have been declared as artificial flavoring, had been added; misbranding of orange juice to give the impression that it contained approximately the same amount of vitamin C as fresh orange juice when it contained only about one-half; shipments of pecans contaminated with *Escherichia coli;* cottonseed and other oils labeled "olive oil"; and the labeling of a mixture of sugar, cocoa, malt, and possibly a small amount of skim milk as "An extract of the most nutritive foods of nature . . . very rich in vitamins . . . aids the digestion of other foods and taken before going to bed produces a tranquil and restorative sleep. Kresto is a food prepared especially for nourishing the organism with the minimum of digestive effort. Kresto contains in correct proportion all the substances necessary for strengthening the brain, nourishing the bones, increasing the red corpuscles in the blood, etc." Similar cases of misbranding by representation of the product as having certain dietary values which it did not have were reported against manufacturers of gelatin and of vitamin concentrates.

WPB Conservation Order Re Theobromine and Caffeine. According to Conservation Order M-222 of the War Production Board, on and after October 1 no producer shall use any theobromine or caffeine other than stocks in his hands on said date, no producer or distributor shall deliver any theobromine or caffeine (not including standard dosage forms—tablets, capsules, ampules, solutions and so on), and no person (other than a wholesaler or retailer) shall accept delivery of any theobromine or caffeine except as specifically authorized by the director general for operations on application, or under the exemption of 2 pounds or less of each item per month which is allowed in the order.

Indiana School Lunch—School Milk Week. By proclamation of Governor Schricker, the week of September 13–19 was set aside as "School Lunch—School Milk Week" for the State of Indiana. The purpose of the occasion was to encourage the cooperation and support of all community groups to aid the school community and county nutrition committees in planning a school lunch and a "penny-milk" program for as many of the public schools as possible. A booklet prepared under the auspices of the Indiana State Defense Council, Indianapolis, and distributed to county nutrition chairmen, outlines the needs for such programs and suggests means of initiating these with the assistance of local defense organizations and civic and community clubs. It is suggested that the first step in establishing a lunch program consists in finding or organizing a sponsoring agency, the titular sponsor of school lunch programs in Indiana being a representative of the school and/or the township trustee. Co-sponsors may consist of civic or

No. 959 Roaster and Double Baker Oven

NATION'S NUTRITION PROGRAM CALLS FOR OVEN-COOKED FOODS

Dietitians realize that balanced diet depends upon scientific preparation, as well as selection, of foods. Charged with responsibility for "making America strong", they have found that Blodgett Baking and Roasting Ovens provide and maintain both the quality and the volume of production demanded.

WRITE TODAY FOR LITERATURE

THE G. S. BLODGETT CO., INC.
53 MAPLE STREET, BURLINGTON, VERMONT
Makers of Fine Ovens Since 1848

Sunfilled pure, concentrated
ORANGE and GRAPEFRUIT JUICES
ARE FREE FROM ADULTERANTS PRESERVATIVES OR FORTIFIERS

When returned to ready-to-serve form, their characteristic properties and nutritive values compare favorably with freshly squeezed juices of high quality fruit.

VITAMIN C . . . an important dietary factor

For example, the vitamin C content of fresh orange juice varies between 35 mg. and 55 mg. per 100 ml. of juice. Reaming, natural oxidation and other factors tend to reduce the fraction appreciably . . . rapidly.

In further support of Sunfilled claims, an unbiased investigator reports virtually no vitamin C loss when Sunfilled pure, concentrated Orange Juice is returned to ready-to-serve form, stoppered and stored in a refrigerator for 24 hours. This assay accounted for the following vitamin C potencies per 100 ml. of reconstituted juice.

Immediately after dilution	50 mg.
2 hours after dilution	50 mg.
4 hours after dilution	50 mg.
6 hours after dilution	50 mg.
24 hours after dilution	49 mg.

Aside from the advantage of being able to prepare juice the night before or for immediate consumption, Sunfilled products offer economies in time, labor, money that are equally important to the dietitian.

Write for complimentary quantities and literature available to institutions on request.

CITRUS CONCENTRATES, INC.
DUNEDIN, FLORIDA

fraternal organizations, P. T. A. groups, mothers' clubs, etc., who are capable of giving financial or other assistance. How to select a proper lunchroom when no room for this specific purpose is available, how to secure equipment, and the personnel problem are all discussed. The booklet also tells what schools are eligible to receive AMA commodities and how these may be obtained, and how to negotiate for delivery of milk at a low price or without cost to the school through the AMA School Milk Program.

Office of War Information Releases. According to a release dated September 6 from the Procurement and Assignment Service of the War Manpower Commission, "A physician should be considered essential to civilian public health interests and, therefore, not available for military duty provided he comes within either one of the two following categories: a full-time medical officer in charge of a health service of a governmental unit or administrative district, such as state, district, county, and city; full-time heads or chiefs of administrative units within a health department, for example, tuberculosis, venereal diseases, maternal hygiene, infant care, epidemiology, vital statistics, etc." Also, full-time industrial physicians, employed by an industry which is manufacturing war materials exclusively or under priority ratings, and physicians serving part time two or more such industries, providing his total part-time service is the equivalent of 40 or more hours weekly, and physicians serving a state industrial hygiene bureau on a full-time basis will not be released for military service.

In order to combat the hidden price increases that result from debasement of quality, use of inferior materials, and "skimping" on measurements and workmanship, Leon Henderson, Price Administrator, announced September 6 that he had created a standards division which will provide OPA operating divisions with the technical assistance required to develop specific standards for inclusion in all OPA regulations where quality of product is a factor. These standards, which must be met if the commodity or product is to command the applicable maximum price, will include definitions of quality and may require goods to be identified and labeled accordingly.

"Waac Volunteers Learn the Way of Army Kitchens at Fort Riley." The New York *Times* for September 25 under the foregoing head stated that 10 members of the Women's Auxiliary Army Corps, most of whom have had previous experience in some phase of food handling, are learning how the Army handles food by taking the mess officers' course at the service command school for bakers and cooks, Fort Riley, Kansas. It was stated that they would graduate October 3 and would be the first women ever attending and graduating from any Army service school.

The Waacs will spend 160 hours doing practical work in the kitchen, 90 hours in class rooms, besides several hours of drill, calisthenics and other activities each week. Subjects covered in the course include kitchen management and administration; nutrition principles and practices of cookery; inspection and storage of foods; Army fresh meat cuts and proper uses; pastries and desserts; sandwich making; field cooking; and "study of field expedients and Army ration systems." The 10 women enrolled were selected from many volunteers and nearly all are college graduates, with experience as dietitians, food demonstrators, cafeteria managers and the like.

"Time spent in the pastry kitchens and in other kitchens," the *Times* states, "is given to the preparation of foods. One full day is devoted to meat cutting, the Waacs cutting carcass beef. The women are to perform the same duties in Waac companies as Army company officers would in their units. This means company administration, including feeding their units."

"The object of the course," according to Lieutenant Colonel Earle D. Brown, school commandant, "is not to make cooks, bakers or butchers of student officers, but to give them enough practical experience to understand problems of mess personnel and to act with some degree of assurance in operating messes.

"There is a definite place and need for them in the war effort. They give every indication of being able to do exceedingly well many of the tasks now performed by men. In many tasks they will prove far superior to men. For one thing, they insist on knowing why things are done certain ways, refusing to accept statements without convincing explanation. The school personnel has accepted the challenge, however, in defense of the realm that has been man's for so many years, and are supplying answers with considerable success."

Among the ten listed appear the names of the following: Ruth R. Jenkins, Florida, Texas, district supervisor, home economics, WPA; Edna L. Cox, Seattle, dietitian, King County Hospital System; Mary E. Miles, Berkeley, California, home demonstration agent, University of California; Gladys V. Heck, St. Louis, home service counselor, Gas and Light Company; Margarita F. Mooi, Albuquerque, New Mexico, dietitian, Veterans Hospital; Rita A. Fink, Buffalo, New York, cafeteria manager, Board of Education.

Relation of Nutrition to Neuromuscular System. A scholarship of $1500 to be devoted to a study of the relationship of nutrition to the morphology and physiology of the neuromuscular apparatus in skeletal muscle has been awarded to Marquette University School of Medicine, Milwaukee, by the National Foundation for Infantile Paralysis, Inc.

Erratum. According to Dr. Helen T. Parsons, due to a mistake in mimeographing, an error crept into the tabular material in the article on "The Nutritive Value of Some Little-Used Food Products" which appeared as table 1 on page 385 in the Current Comment section of the June JOURNAL. The contribution of 100 gm. beef liver to the day's requirement of nicotinic acid was erroneously stated as 175,000 micrograms instead of 17,500 micrograms. Also, the second column should have appeared under the heading "thiamin" rather than riboflavin.

Hazel K. Stiebeling Receives Appointment. Dr. Stiebeling, formerly head of the Family Economics Division, U. S. Department of Agriculture, has been appointed assistant chief of the Bureau of Home Economics of the Department, where she will have charge of the research work in the field of home economics.

Inez Willson Receives Appointment. Miss Willson, formerly director of the Department of Home Economics of the National Live Stock and Meat Board, has been appointed associate editor of *What's New in Home Economics*, according to an announcement in the September issue of that publication.

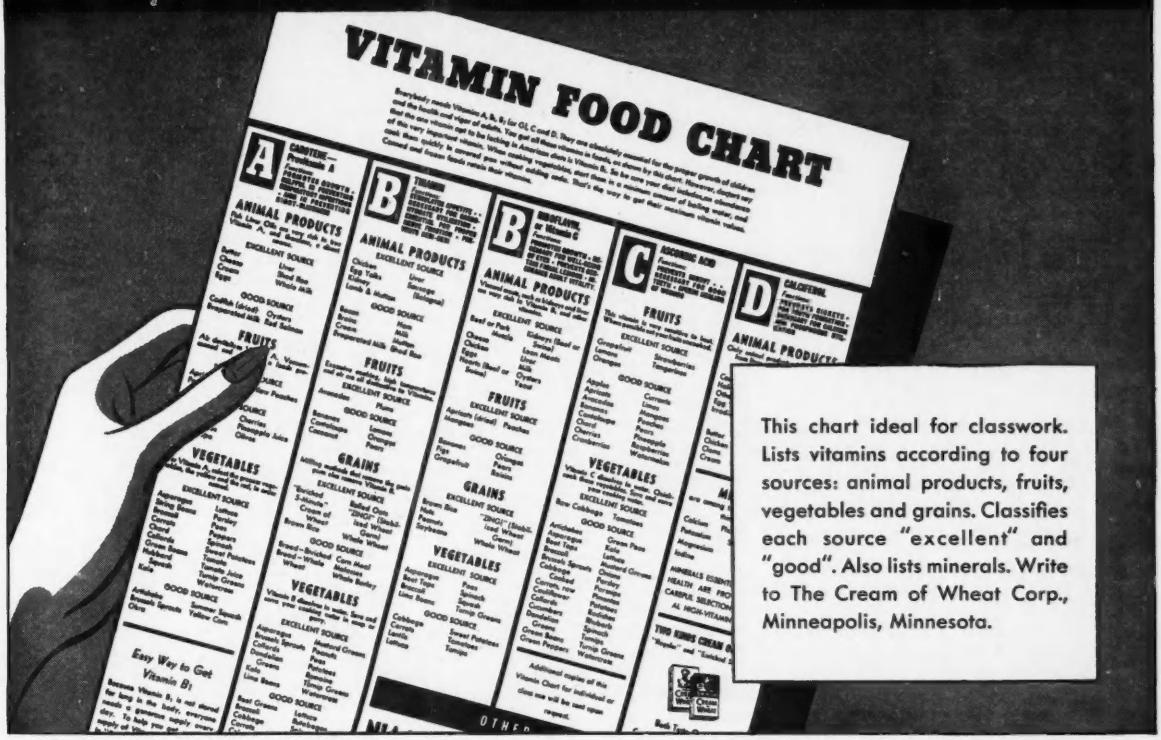
Katharine Harris Named Consultant. Miss Harris, Department of Institution Management, Cornell University, has been named consultant on Melva Bakkie's staff of the American Red Cross. She will assist in the revision of canteen and canteen aide courses.

Oklahoma Dietetic Association. At a recent Executive Board meeting a plan was worked out for obtaining new members for the state association. The state was divided into sections with a dietitian in each section responsible for interviewing prospective members in her locality. It was also voted that a $100 war bond be purchased.

Dr. Helen B. Burton and Mrs. Nell R. Evans, School of

Send for this FREE
VITAMIN FOOD CHART

Prepared by the makers of Cream of Wheat
and approved by recognized authorities



This chart ideal for classwork. Lists vitamins according to four sources: animal products, fruits, vegetables and grains. Classifies each source "excellent" and "good". Also lists minerals. Write to The Cream of Wheat Corp., Minneapolis, Minnesota.

Only "Enriched 5-Minute" Cream of Wheat offers all these advantages for less than 1¢ a bowl!

THIAMIN AND NIACIN. Each ounce of "Enriched 5-Minute" Cream of Wheat provides 150. micrograms of B_1—added in form of stabilized wheat germ and thiamin—and 375. micrograms of niacin.

CALCIUM-PHOSPHORUS. Each ounce of "Enriched 5-Minute" Cream of Wheat provides 143. mg. of calcium and 160. mg. of phosphorus — utilized as well, if not better, than when supplied by milk.

IRON. Each ounce of "Enriched 5-Minute" Cream of Wheat provides 12. mg. of iron — essentially available as medicinal iron.

QUICK-COOKING. "Enriched 5-Minute" Cream of Wheat cooks to full digestibility even for babies in 5 minutes.

TWO KINDS. In addition to "Enriched 5-Minute" Cream of Wheat there's "Regular" — also deliciously smooth-tasting, rich in quick food energy, quickly digested. Both cost less than 1¢ a serving.

Home Economics, University of Oklahoma, conducted a refresher course for cafeteria managers of the Oklahoma City schools the last week of August, with an attendance of 35 to 40 persons. The course consisted of lectures and demonstrations of proper methods of preparing food, and food selection. Several films were shown and trips made to wholesale grocers and food production establishments. At the end of the course members of the class visited the campus of the University of Oklahoma and were given certificates of accomplishment by the Extension Department.

Laura A. Miller, assisted by Dr. Burton, taught a refresher course in nutrition on the University of Oklahoma campus in July.

The Cleveland County Red Cross Nutrition Committee has sponsored nine classes in nutrition since early spring.

A refresher course in nutrition was given in Oklahoma City by Dr. Armstrong, Household Science Department, Oklahoma A. & M. College, for home economics graduates. The course, which began on September 22, consisted of two weekly lessons for three weeks.

Mrs. Nema Raulston Augustus, formerly of the State Veterans Hospital, Sulphur, has been appointed to the dietetic staff of St. Anthony's Hospital.

Florine Craig, Kansas State College, replaces as student dietitian at the University Hospitals, Vivian Olson who has resigned to return to her home in Montana.

Doris Stengar, member of the dietetic staff at the University Hospital since February, has resigned to accept a position at the Salem Deaconess Hospital, Salem, Oregon. Betty Boehm succeeds Miss Stengar.

The following attended the American Dietetic Association convention in Detroit: Maxine Turner, state health nutritionist, and member of the House of Delegates; J. Marie Melgaard, director, Dietary Department, University Hospitals, a convention speaker; Sister Mary Margaret Mahon, head, Dietary Department, St. Anthony's Hospital; and Harriet Sedgwick, Veterans Administration Facility, Muskogee.

Pittsburgh Dietetic Association. Alice Knox, former dietitian of the Pittsburgh School Lunch System, left August 15 with the Pittsburgh Hospital Unit of the United States Army and has been sent to Fort Lewis, Washington, for training in organization before assignment to overseas duty. Irene Yakulis, formerly of West Penn Hospital, has received an Army hospital appointment at Greenville, Mississippi.

The following appointments to civilian positions have been announced: Mary Borland, formerly of Magee Hospital, to Renziehausen Memorial Ward for diabetic children, Children's Hospital; Biril Hineman, formerly student dietitian, Michael Reese Hospital, Chicago, now assistant administrative dietitian, Allegheny General Hospital; Zetta Thomas, formerly student dietitian, Philadelphia General Hospital, now permanent relief dietitian, Allegheny General Hospital; Blanche Mank, formerly student dietitian, Presbyterian Hospital, now chief dietitian, Martins Ferry Hospital, West Virginia; Dorothy Godschalk, formerly student dietitian, Presbyterian Hospital, now permanent member of the staff; Virginia Keim, formerly at Torrence State Hospital, now dietitian, Ohio Valley Hospital, McKees Rocks; Evelyn Hartman, formerly at West Penn Hospital, now dietitian, Municipal Hospital; Mary Anna Frost, formerly at the Children's Hospital, now at the Food Clinic, Boston Dispensary; Mary Aimore, formerly at Manteno State Hospital, Illinois, now at Children's Hospital; Ruth Adams, formerly at Somerset Hospital, now at Braddock General Hospital; Eleanor Johnston, formerly dietitian at Braddock General Hospital, now at the Pittsburgh District Dairy Council. Other recent appointments include: Marcelle Nohren, graduate of the training course at West Penn Hospital, now in charge of the new Formulae Room of the Children's Ward which opened in October; Alice Newton, also a graduate of the training course, now dietitian of the Pavilions; and Constance Weiss, formerly of Sewickley Valley Hospital, now therapeutic dietitian, Shadyside Hospital.

Student dietitians at West Penn Hospital include: Betty Cosgriff, North Dakota Agricultural College; Ruth Baker, Juniata College; Betty Devore, Pennsylvania State College; Shirley Dodds, Cornell University; Katherine Kostalek, University of Idaho; Margaret Samuel, Hood College. Those at Shadyside Hospital are: Virginia Coe, Ohio University; Nancy Phillips, Pennsylvania State College; Mary Louise Gregory, Carnegie Institute of Technology; and Shirley Wing, Kansas State College. The following are student dietitians at the Presbyterian Hospital: Charlotte Monheim, Carnegie Institute of Technology; and Gloria Schmidt, Hood College.

Maxine Schumacker, St. Margaret's Hospital, Jennie Barton, Presbyterian Hospital, Irene Willson, Shadyside Hospital, and Betty Reiss, student dietitian, Shadyside Hospital, attended the meeting of the Pennsylvania Nutrition Council at Harrisburg, September 19–20.

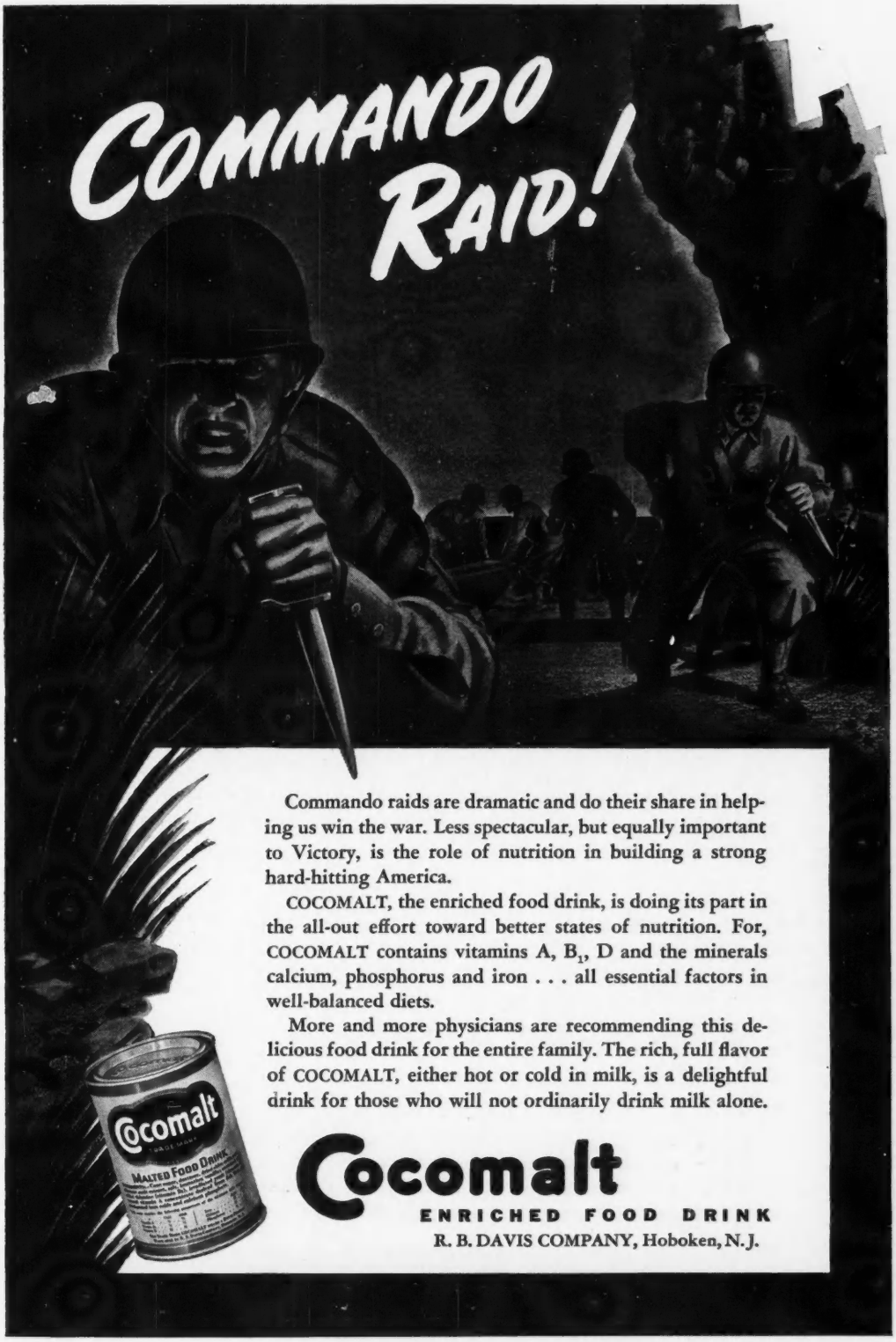
Dorothy Palmer, formerly assistant dietitian, Presbyterian Hospital, was married September 12 to Mr. Howard Grabill.

News from our Advertisers and Exhibitors. Marye Dahnke, in charge of the cuisine service of *Kraft Cheese Company*, Chicago, has recently released a packet of quantity recipes using "V-8" vegetable juices. The recipes are printed on cards and include a celery sandwich with cheese sauce, a molded salad, a rice and frankfurter casserole, etc.

Mead Johnson & Company, Evansville, Indiana, in a recent letter to this JOURNAL, announced that WPB had frozen all stocks of agar in order to protect the requirements for bacteriologic culture medium use of the Army, Navy and civilian hospitals and laboratories. Because of this order the manufacture of "Pectin-Agar in Dextri-Maltose" has been discontinued. Another product of the same company, "Casec," previously described in the JOURNAL, is said to give good results for the same purpose; namely, the treatment of diarrhea in infants.

Chiropractic "Education"

More time spent on anatomy and pathology would soon make any intelligent student unwilling to give serious consideration to the ridiculous fallacies of the chiropractic concept. The idea of securing contributions from the patients or rather the victims of chiropractic to promote perpetuation of this pseudo science is a sort of cynical effrontery typical of the methods by which these peculiar practitioners have reached their present position on the American medical scene. Significantly, this is still the only country in the world that gives any kind of legal recognition to the "chiros."—*Current Comment, J.A.M.A., 120: 293, 1942.*



Commando raids are dramatic and do their share in helping us win the war. Less spectacular, but equally important to Victory, is the role of nutrition in building a strong hard-hitting America.

COCOMALT, the enriched food drink, is doing its part in the all-out effort toward better states of nutrition. For, COCOMALT contains vitamins A, B_1, D and the minerals calcium, phosphorus and iron . . . all essential factors in well-balanced diets.

More and more physicians are recommending this delicious food drink for the entire family. The rich, full flavor of COCOMALT, either hot or cold in milk, is a delightful drink for those who will not ordinarily drink milk alone.

Cocomalt

ENRICHED FOOD DRINK

R. B. DAVIS COMPANY, Hoboken, N. J.

Nutrition and the War

Bridgeport, Connecticut, has a plan for getting more of the right kind of food into the lunch boxes of our "soldiers of industry." It's been working there, and it's so simple, it ought to work other places, too.

A survey was undertaken, to find out just what war workers were eating for lunch. This was the first city-wide survey of eating habits of industrial workers in the country. One hundred members of the Women's Volunteer Service gathered the facts. They interviewed more than 800 women to find out what was packed in the lunch boxes their men folk took to the factory. Some volunteers even went to factories at mealtime to interview the men. Few war workers were perfectly satisfied with what they found in their lunch boxes. The women who pack lunches made all kinds of demands; demands like these:

"Why can't men buy tomato juice to drink in the plants instead of soft drinks? Think of all the vitamins they'd get that way!"

"Someone who knows about food ought to be in charge of plant factory cafeterias."

"Lunch periods ought to be longer. Fifteen minutes isn't enough."

Of 858 women interviewed, 817 packed one or more lunches for war workers. One-half the women packed beverages, and 50 per cent of the time, it was coffee. Only 276 women gave their war workers fresh vegetables in lunches. Only one-quarter of the sandwiches were made of whole wheat or enriched bread. The general lunch pattern consisted of sandwiches, soft drinks, pie, and candy.

The "women across the fence" were asked to give their ideas on lunch-box packing. Each week, a Bridgeport newspaper named an outstanding homemaker as a "kitchen soldier." First one chosen has a 22-year-old son who works in a war plant. Each weekday he carries his lunch to work. His sister, supervised by her mother, does the job of preparing the lunch. They see to it that each lunch includes some of the 5-star foods that every working man should have to keep healthy: milk; whole wheat or enriched bread; meat or cheese or eggs or fish; fruit; and vegetables.

For a week, this first "kitchen soldier" shared her favorite recipes, menus, and lunch-box packing tips with readers of the Bridgeport newspaper. Then the newspaper produced a second "kitchen soldier," this time an Italian mother. Every day, she packs lunches for 5 brawny soldiers of industry—her sons and her 3 boarders. Food experts persuaded this mother to use enriched white bread, or whole wheat, instead of the Italian bread she had been using. They suggested potato salad or cold baked beans, as a change from bread and macaroni. For fruits, they advised using figs, dates, and prunes for men who need as much energy as they can get for heavy manual labor.

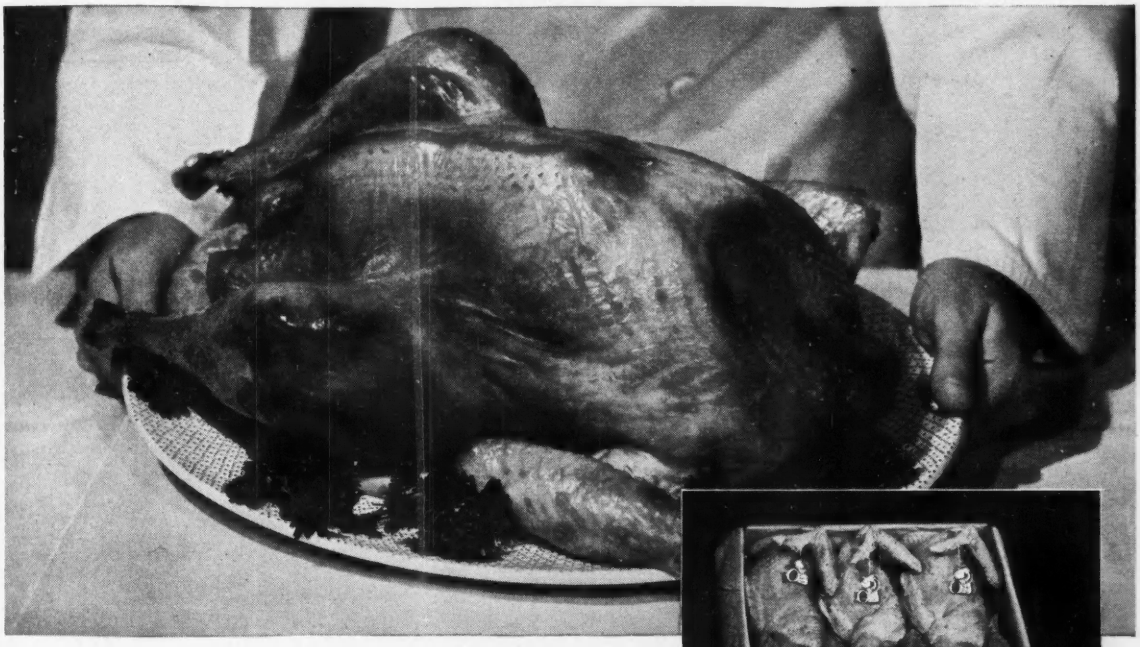
Along with newspaper publicity about lunch boxes, volunteers gave lectures on lunch-box packing. Graduates of the course are in great demand in all sections of the city, giving demonstrations before clubs, churches, in stores, and to neighborhood groups. They don't just *talk* food; each speaker takes along a lunch box packed with wholesome food to show her audience what it looks like.

The Bridgeport Plan has been established as a permanent community responsibility, and set up on a "project committee" basis. Outstanding civic, business, industrial, and labor leaders were named to an Advisory Committee. Headed by the Mayor as an honorary chairman, this group determines policies for the whole organization. Publicity activities, volunteer workers, food stores, restaurant and concession units, all operate on a committee basis in their various phases of the campaign.

Just like making all your servings from one bird . . . so

uniform in quality

are these meaty, tender turkeys!



Packed in boxes of 6. For easier quantity cooking, all birds in each box are uniform in weight.

Whether you serve ten or a hundred of these Swift's Premium Turkeys, they'll *all* be plump, tender, and heavy-breasted, with plenty of juicy dark meat—*the pick of the flocks.*

You'll find, too, that *all* Swift's Premium Turkeys give you a maximum number of servings per bird. *Meat, not size, gives them weight.*

These are turkeys specially selected by poultry experts . . . critically examined, graded to Swift's exacting specifications. The pick of the flocks are tagged Swift's Premium.

Nationally famed and respected as a mark of known, unvarying quality, the Swift name is your *guarantee* of fine turkeys.

This year, be sure that *every* turkey you serve is *identical* in quality—tender, juicy, delicious. Specify *Swift's Premium Turkeys!* Order early from your Swift salesman, or write Swift & Company, Chicago.

The pick of the flocks are tagged ➡

SWIFT'S PREMIUM TURKEYS

Also • CHICKENS • DUCKS • GEESE • CAPONS

Cholesterol

Cholesterol is a constituent of all cells but its exact significance in cellular or general metabolism has not been determined. Its importance is possibly in some physico-chemical property necessary to maintain the architecture of the cell and its membrane. It is probably important as a medium for transporting fatty acids.

Cholesterol can be synthesized by the mammal from an, as yet, unknown precursor. It can also be metabolized or broken down. It may be an accessory foodstuff for certain invertebrates.

Cholesterol may be deposited from the bile to form gall-stones and from the intimal coat of the arteries to produce atheroma. The relationship of these processes to the metabolism of cholesterol and to dietary cholesterol is obscure. The solution of the problem must await further knowledge as to the exact role or roles of cholesterol in the body.

Bürger (1928) listed the cholesterol content of certain foodstuffs, including the following values for the daily intake of sterols on various diets: for infants on breast feeding, 49 to 97 mg.; on mixed feeding, 62 mg.; on buttermilk feeding, 18 mg. For adults on a fat-free diet, 39 to 109 mg.; on a mixed diet, 200 to 362 mg.; on a fat-rich diet, up to 1400 mg.

The sterol content of the commoner foodstuffs, as given by various investigators, is as follows (mg. per 100 gm. fresh weight): beef, 38–78; fish, 21–95; pig's liver, 130–140; oysters, 215; lard, 110; cod liver oil, 400; eggs (whole—average value), 313; full cream, 11.8; butter, 240–340; cheese, 42–62; bread, 19; margarine, 43; chocolate, 56; etc. etc.—*Cook, R. P.: Cholesterol Metabolism, Nutrition Abstracts and Reviews, 12:1, 1942. (Reprints are available at one shilling each on application to the Secretary, Rowett Institute, Bucksburn, Aberdeen, Scotland.)*